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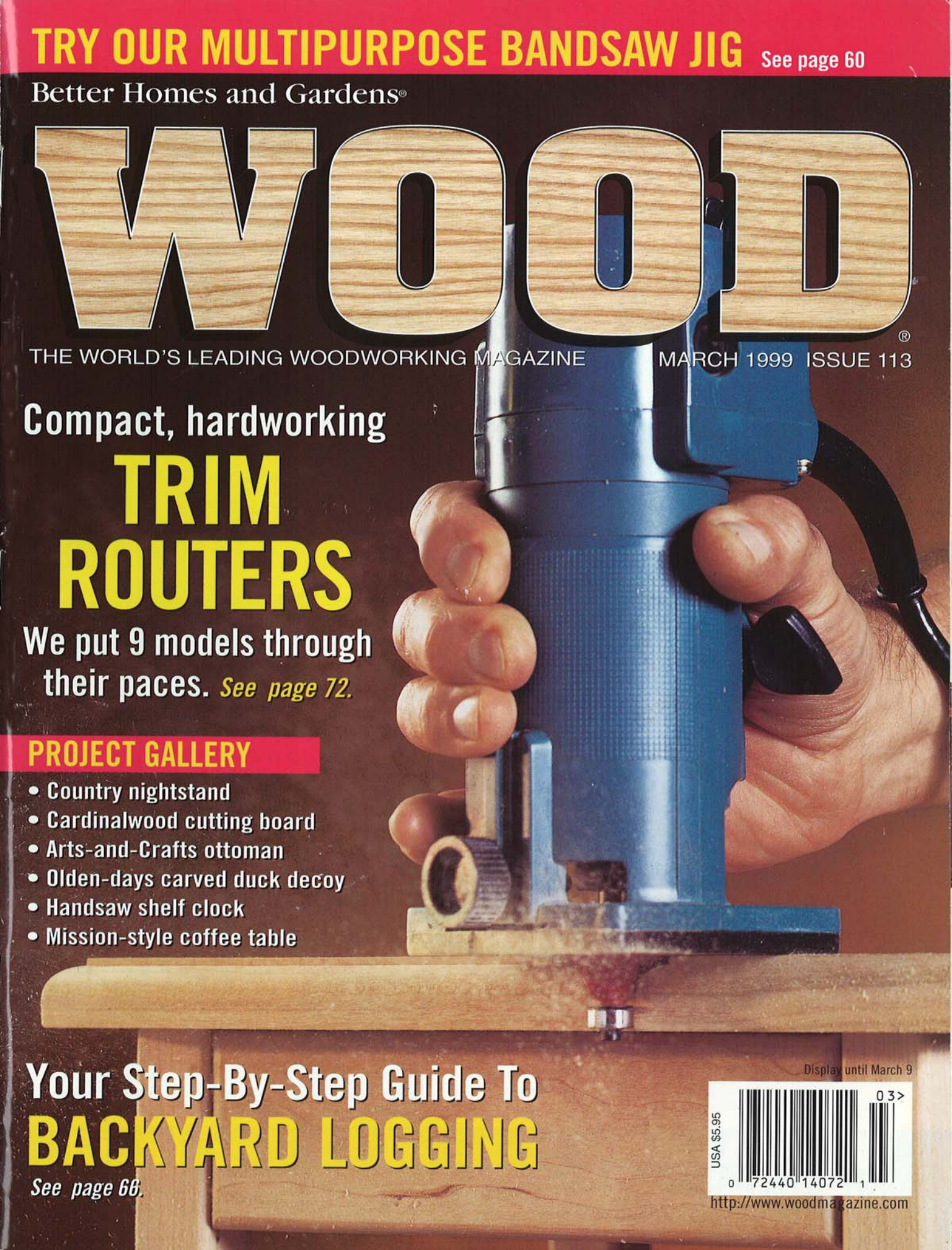
WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE MARCH 1999 ISSUE 113



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See page 68.

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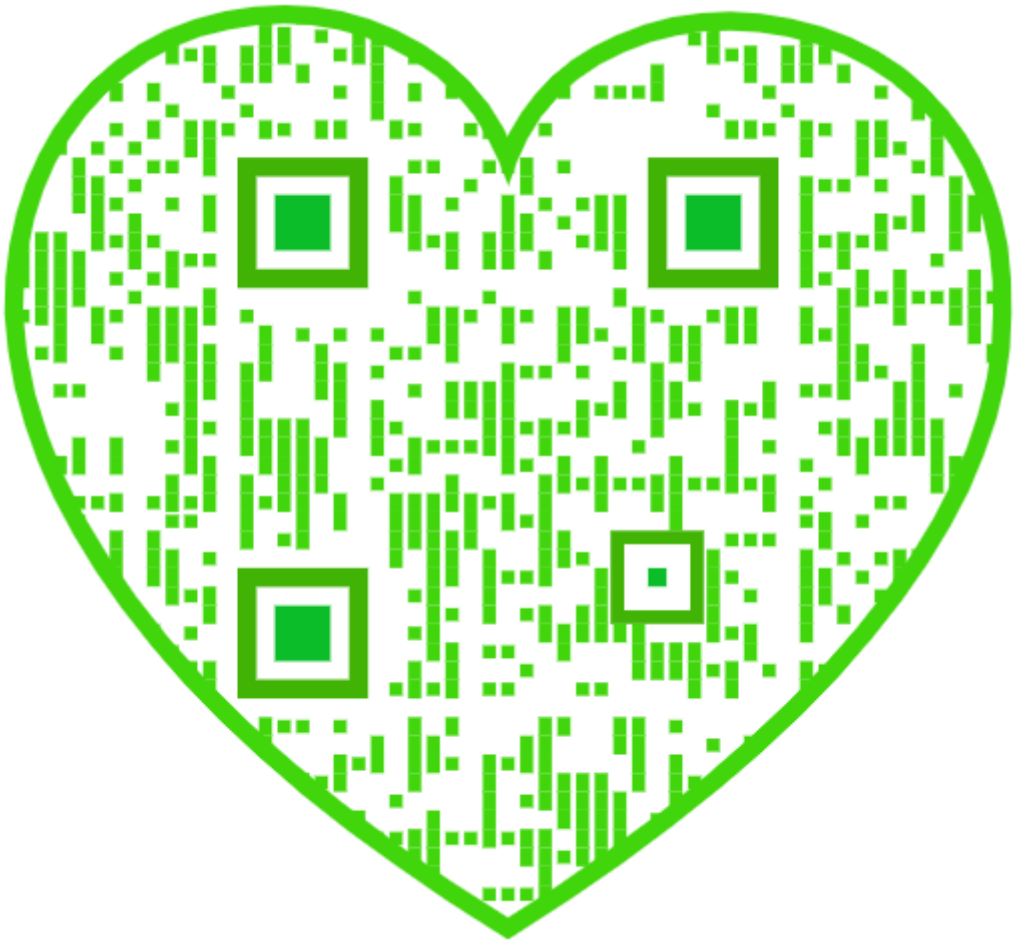

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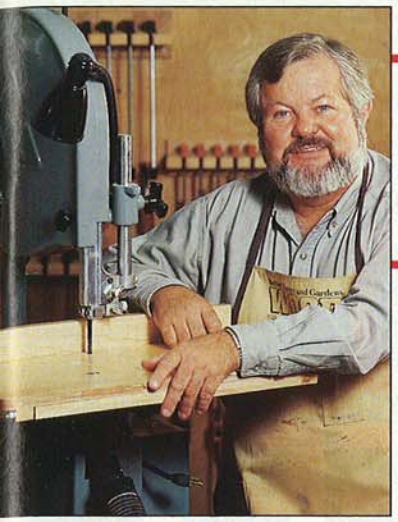

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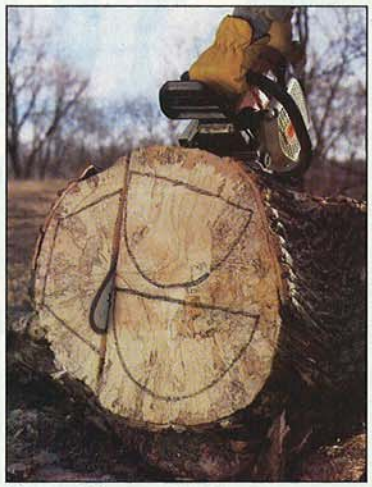

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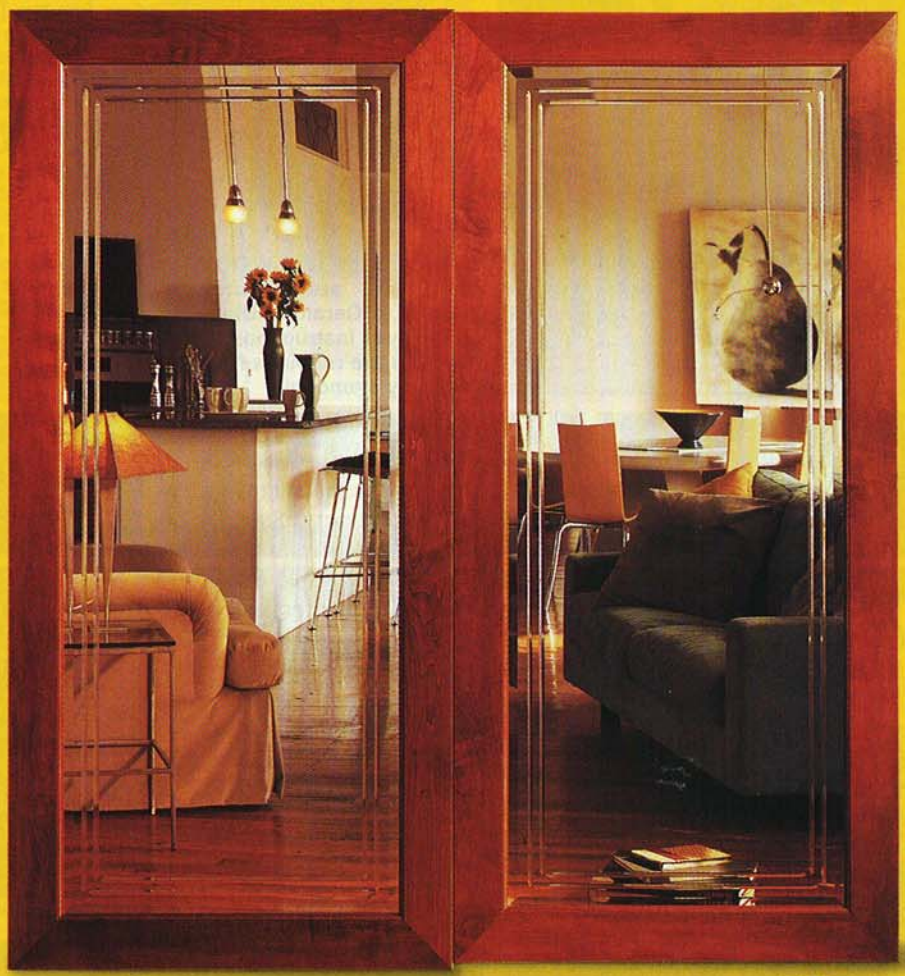

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THE EDITOR'S ANGLE

You never know where you'll run onto A Great Project Design

Members of the WOOD magazine staff listen intently to Gerald LaBlanc as he gives instructions on how to make rubbings from cemetery memorials.

I've done a lot of traveling for *WOOD*® magazine over the last 15 years. And in the process, I've uncovered a ton of projects, met literally hundreds of craftspeople, and have come up with scores of article ideas that have come to life on the pages of this magazine.

But I've got to admit that I never once dreamed that a local cemetery could produce some of the best woodworking patterns available anywhere. But it's true. In fact, every cemetery is a treasure trove of great ideas.

One of the many gravestone designs we made rubbings from at Woodland Cemetery.

"Why," you ask? It's because many of the memorials in a cemetery have beautiful designs "carved" into them with sandblasting equipment. According to Gary Chickering, co-owner of Des Moines-Winterset Monuments, an artist produces a rubber stencil design on computerized equipment. Then, another person glues the stencil to the stone, and a sandblaster does the rest.

So what does this mean to you? If you're into scrollsawing, it's obvious. But you also can use these designs as carving patterns, furniture appliqués, and in any number of other ways.

Photographs: Larry Johnston and Larry Clayton

Here's what to do if you are interested in acquiring some new designs for free at your local cemetery. Start by going to an art-supply store and getting a lithographic crayon. Also take along several sheets of tracing paper.

When you spot a design you like, position the tracing paper where you want it and rub the crayon over the paper until the design appears. It helps to have someone with you to hold the paper in place while you are doing the tracing. Or you could use some masking tape. Note: Slightly raised designs are the easiest to trace.

That's all there is to it. These "rubbings," as they are called, are so fun and quick to do that you'll have plenty of them to work with in an hour or less. I guarantee you that you'll be impressed with the results.

So how did I find out about this terrific new source of project designs? A man by the name of Gerald LaBlanc, who heads up a group called Woodland Cemetery Restoration here in Des Moines, deserves the credit.

Thanks for the tip, Gerald. I plan to put my rubbings to good use.

Larry Clayton

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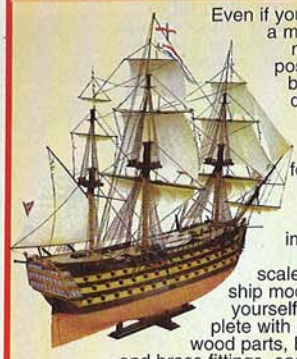

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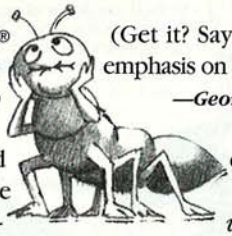
TALKING BACK

The toothless termite



I thought the readers of *WOOD®* magazine might like to stop sawing long enough for a good joke. So here it is —

One day a toothless termite walked into a tavern for lunch. He saw one customer standing next to the gleaming mahogany with his foot up on the brass rail, and sipping on a drink. Not seeing any employees, he approached the other customer and asked, "Excuse me sir, is the bar*tender* here?" (Get it? Say the final sentence with emphasis on "*tender*.")

—George Dar, Upper Darby, Pa.

Good one, George! If you know a good woodworking-related joke, please feel free to share it with us here at WOOD magazine. *And if it makes us laugh, we'll print it here in Talking Back for your woodworking peers to enjoy.*

Modified grinder increases versatility

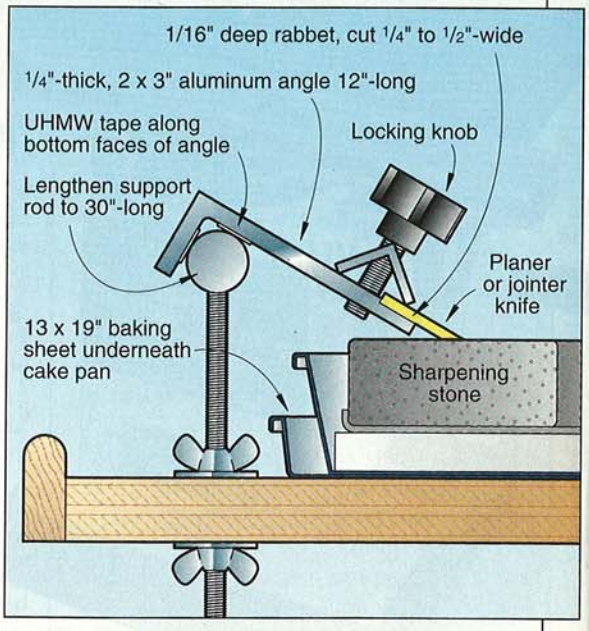
Ever since I saw the cover of issue 102 of *WOOD®* magazine, I've wanted to build your wet-wheel grinder. My concern was that there was no mention of a way to sharpen jointer and planer knives. This is a costly service to have done. So I made a few modifications to the project that will put straight, razor-sharp edges on planer knives up to 15" long, or do a couple of 6-8" jointer knives at a time.

First, lengthen the support rod from 23¾" to 30", and extend the tool rest and clamp from 7" to 12". Instead of the 1×2" angle iron for the tool rest, use 2×3" aluminum ¼" thick. Using a router table, cut a 1/16" rabbet, ¼" wide in the top face of the aluminum angle nearest the sharpening stone. Appropriate care should be taken when routing aluminum. I used a ½" carbide-tipped straight cutter, running at 12,000 rpm. Make the cut in two 1/32" deep passes. Then, file off any burrs or sharp edges. This rabbet is the key to providing a repeatable positive backstop for grinding jointer and planer knives.

Add a 13×19" baking sheet underneath the 9" round cake pan to catch additional water that tends to drip off the ends of longer knives.

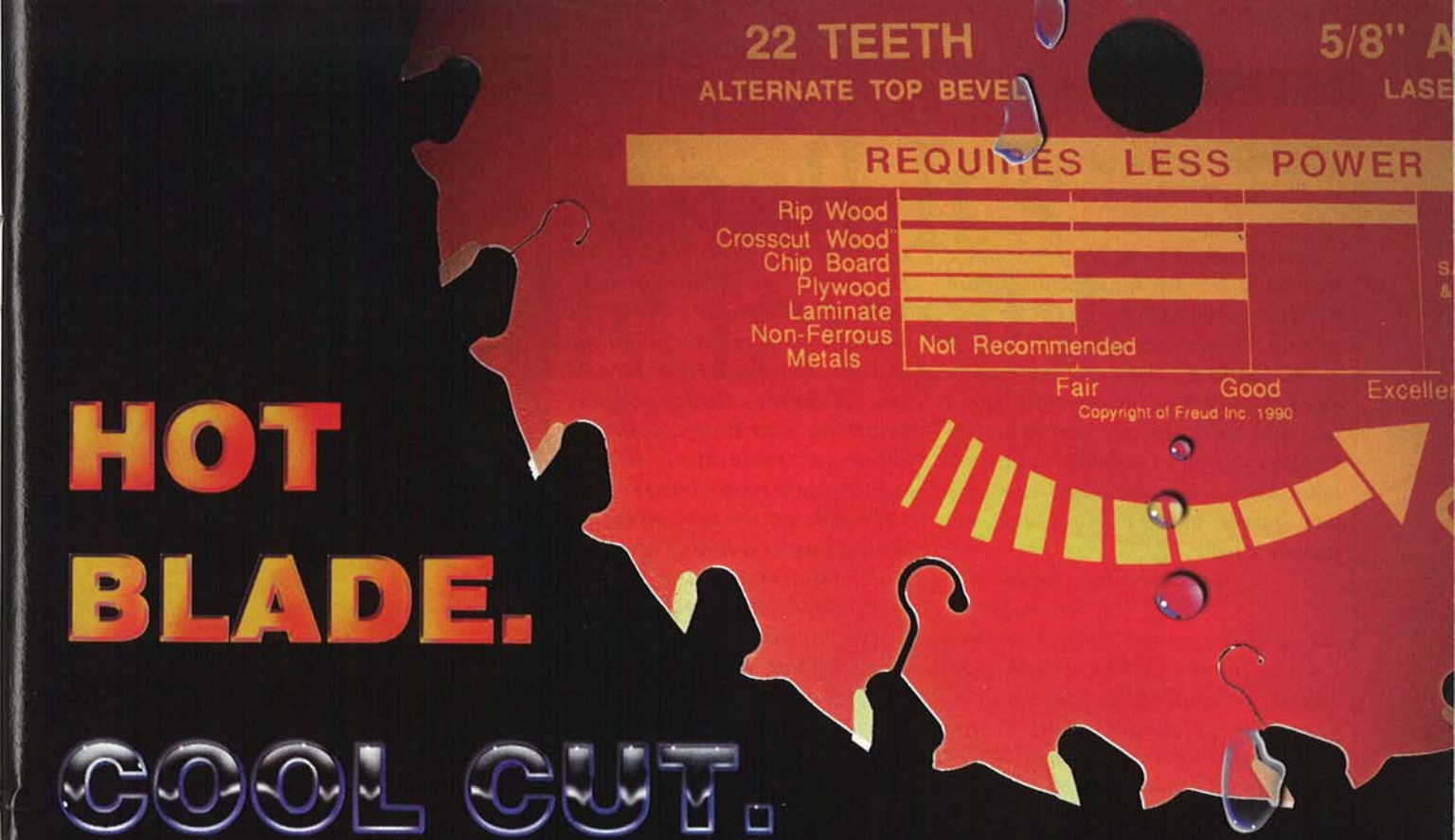
A couple more suggestions to those making the grinder: Spend a few more bucks and use stainless steel hardware for every possible component. Also, carriage bolts' square portions are not necessarily standard, so take your wheel along to the hardware store, and find a carriage bolt that fits the hole in the plate without slop.

—Chad Marsh, Puyallup, Wash.


1/16" deep rabbet, cut 1/4" to 1/2"-wide
1/4"-thick, 2 x 3" aluminum angle 12"-long
UHMW tape along bottom faces of angle
Locking knob
Lengthen support rod to 30"-long
Planer or jointer knife
13 x 19" baking sheet underneath cake pan
Sharpening stone

Speak your mind

We welcome your comments, criticisms, and yes, even compliments. We'll publish letters of the greatest benefit to our readers. Write: Talking Back, *WOOD* Magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023



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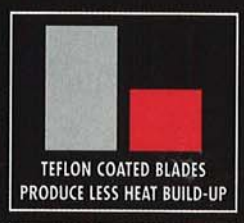
- This puts less stress on the blade. Studies by DuPont tell us that TCS coated blades last up to 50% longer than conventional blades before sharpening.
- It also causes less pull on the saw, 38% to be exact. Which translates into over 1/3 more cutting power. And as a bonus, the smoother cutting action means less wear and tear on the motor.
- TCS blades won't bind like conventional blades. The self-lubricating, non-stick finish sheds sappy wood residue before it builds up. So you will get a smoother, more professional cut with TCS blades.
- Clean up with these blades is also easy. Pitch and resins just don't stick well to the industrial Teflon. So, even after extensive use, simply wipe clean with hot water.
- Don't be concerned about cleaning the blades with water. The Teflon coating makes the blade rust resistant, in fact, you don't need oils, greases or rust-preventatives.



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TALKING BACK

Continued from page 6

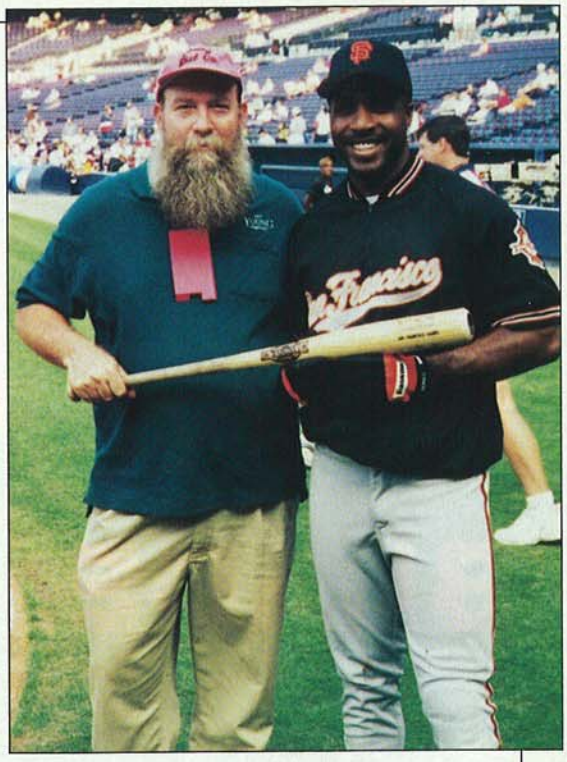
Batty for lathe stock

It was fun to read in issue 106 of *WOOD®* magazine about Juan Faxas' Glomar baseball bats. It's good to see that there are still some products not being replaced by plastic or aluminum. I hope they never will be!

I've found a new source for lathe stock in recycling old baseball bats. I find discarded bats that have seen better days through Goodwill and garage sales. Then I turn them into new mallets, gavels, handles, stool legs, and miniature bats.

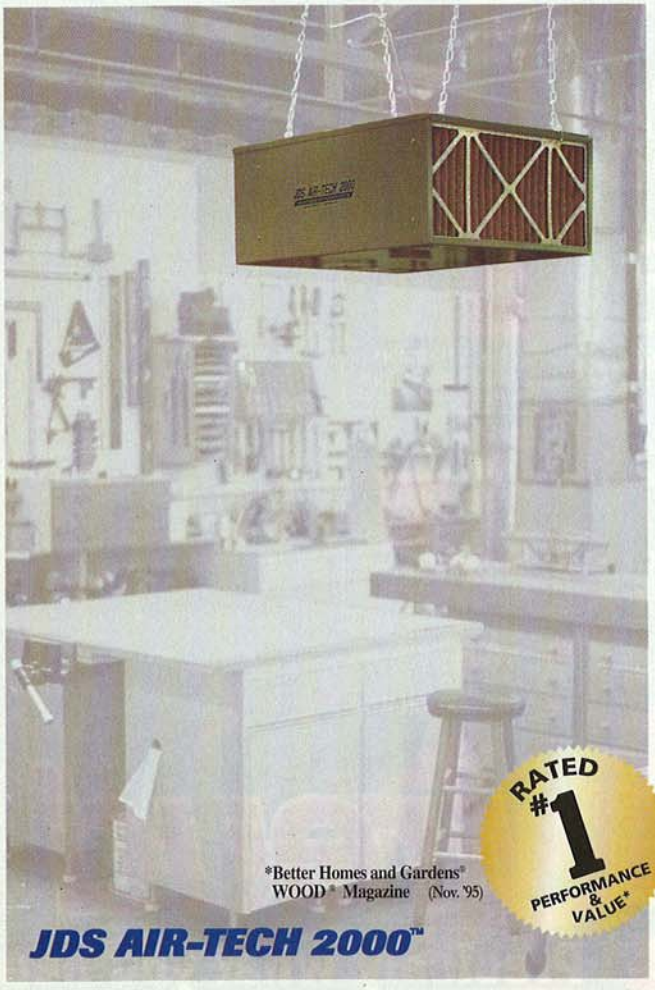
—Robert Collins, Snyder, N.Y.

While we're on the subject, we discovered another WOOD *reader who makes baseball bats for the pros. Chris Young, owner of the Young Bat Company in Brevard, North Carolina, phoned us to say that his 14-employee company will make more than 75,000 northern white ash bats this year. Chris tells us that, on average, each of his 200 major leaguers will go through 100 bats in a year. Some order as many as 300, though. Young's clients include Colorado Rocky Larry Walker, St. Louis Cardinal Brian Jordan, Los Angeles Dodger Gary Sheffield, and Barry Bonds of the San Francisco Giants (shown* right *with Young).*



The pros get the best sticks, but Young makes a line of amateur and commemorative bats as well. He even produces some batty furniture such as bar stools, tables, headboards, and rocking chairs.

Young has also patented a bat made from a wood composite that he calls the "360 Degree Woody." As the name implies, the ball can be hit anywhere on the bat without the bat splitting. Of course, these composite bats can't be used in games, but since they're guaranteed for over a thousand hits, many professional teams use them for batting practice.



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The Mirage® hearing aid is so advanced and compact it fits completely into the ear canal. In fact, the Miracle-Ear® Mirage® is designed to maximize your natural ability to hear sounds.* Yet within this tiny hearing aid we've incorporated some of our latest technology.

- So tiny that it's virtually invisible to those around you.
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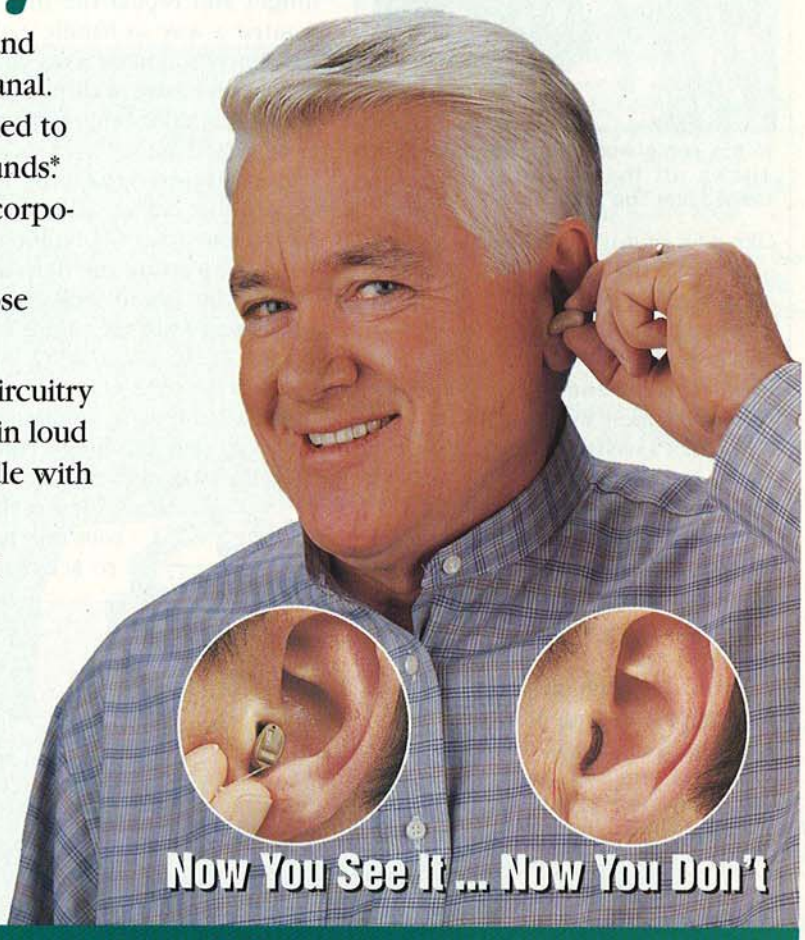
- Reduced likelihood of phone feedback because of its special design.

To receive details about the Mirage® hearing aid, as well as other helpful hearing information, mail the attached postage-paid card today, or call toll-free: **1-800-896-6400**.



Free! Information Library

Discover important facts about hearing loss ... and the Miracle-Ear® Mirage® hearing aid. Simply mail the attached postage-paid card, or call our toll-free number, **1-800-896-6400**, for your free *Hearing Loss & You* Information Library. You'll receive a special booklet and an educational videotape without charge or obligation. It's easy to get answers. The information's free. And you're under no obligation whatsoever. Do it today!

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Hearing Systems by Bausch & Lomb

Circle No. 1984

* Hearing aids do not restore natural hearing. Individual experiences may vary depending on severity of hearing loss, accuracy of evaluation, proper fit and ability to adapt to amplification. Only your certified Miracle-Ear representative can tell you if Mirage is right for you.

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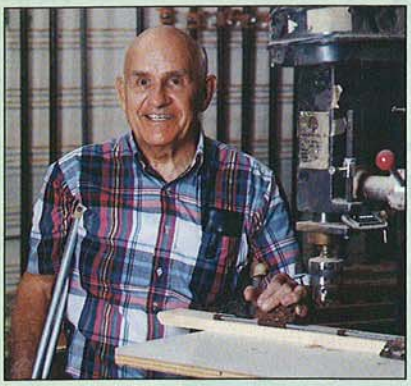


In his son's workshop, Lee Fishback shows off the drill press jig that earned him Top Shop Tip honors.

Like a lot of guys, Lee Fishback has a modest woodworking shop tucked away in the corner of his basement. But he spends more time in his son Ron's shop. That's because Ron is a cabinetmaker and Lee helped him run his business for several years.

Besides assisting with the office work, Lee always looked for ways to improve productivity around the shop. That quest, and an afternoon of drilling European-hinge holes in a stack of cabinet doors, led him to create this issue's Top Shop Tip, shown at *right*.

If you've streamlined a woodworking process in your shop, share the idea with us and if we publish it, we'll give you $40. And, if we select your tip as our Top Shop Tip, you'll win a tool prize valued at more than $250. To submit a tip, send a letter, including your daytime phone number, with a photo or drawing of your idea, to:

Tips from Your Shop (and Ours)
***WOOD*® Magazine**
1716 Locust St., GA310
Des Moines, IA 50309-3023

We try to publish original shop tips, so please send your ideas only to *WOOD* magazine. And remember, we cannot return submissions. Thanks!

Dave Campbell

GENERAL-INTEREST EDITOR

Door hinges make great stops for a drill press

Drilling holes in cabinet doors for European-style hinges can be tedious. I used to set a stop on my drill-press fence and drill all the holes for the bottom hinges first, then set another for the top hinges and repeat the process. I wanted a way to handle each door only once, so I made a set of flip stops for my drill press with parts from two heavy-duty door hinges. They're easy to make and use.

First, remove the pins from the hinges and, leaving one leaf of each hinge intact (part C), cut the other leaf where shown by the dotted lines in the drawing *below*. Drill and tap holes for set screws in the barrels of parts A, B, and D. Insert a ¼"×2' steel rod through the parts as shown, and fasten this assembly to a wooden auxiliary fence so that the hinge leaves overhang the edge of the fence.

Clamp the jig to your drill press table to set the edge-to-hinge distance for the cabinet door you're drilling. Measure and position one of the jig's leaves to stop the bottom of the door, and the other to stop the top. Tighten the set screws on parts B to lock the stops in place.

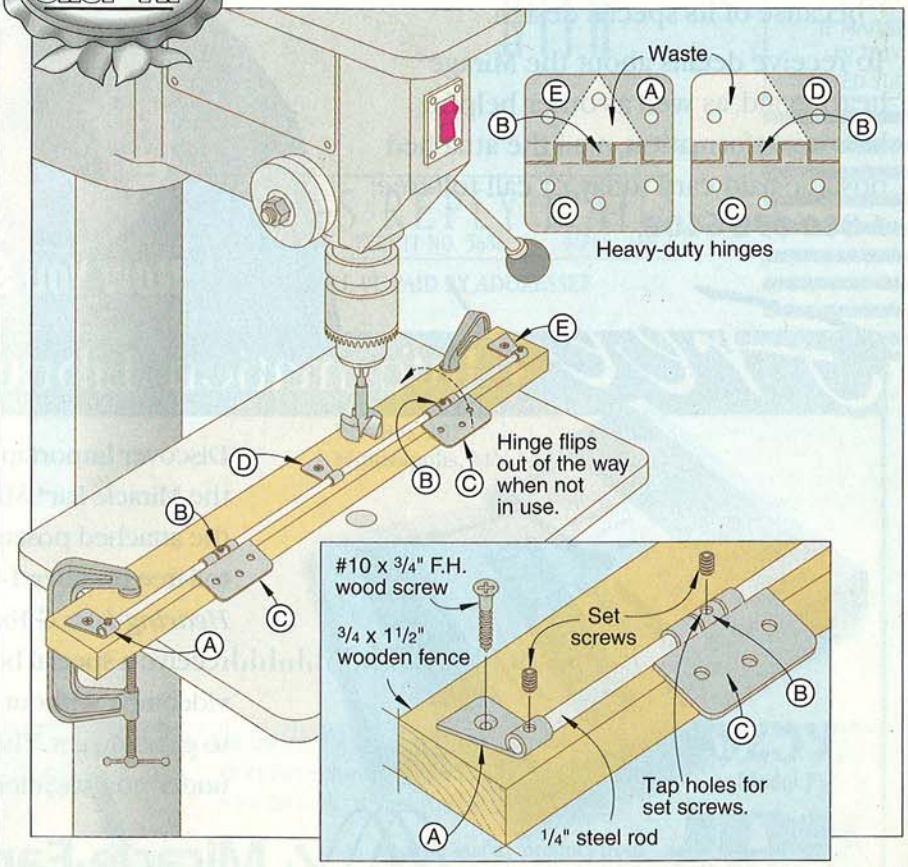
Flip the bottom stop down and the top stop up and drill your bottom hinge hole. Now flip the bottom stop up and the top stop down, and drill the top hinge hole.

You can adapt this stop system for use on your other shop tools. Try it on your radial-arm saw, mitersaw stand, or router table.

—Lee Fishback, Portland, Ore.

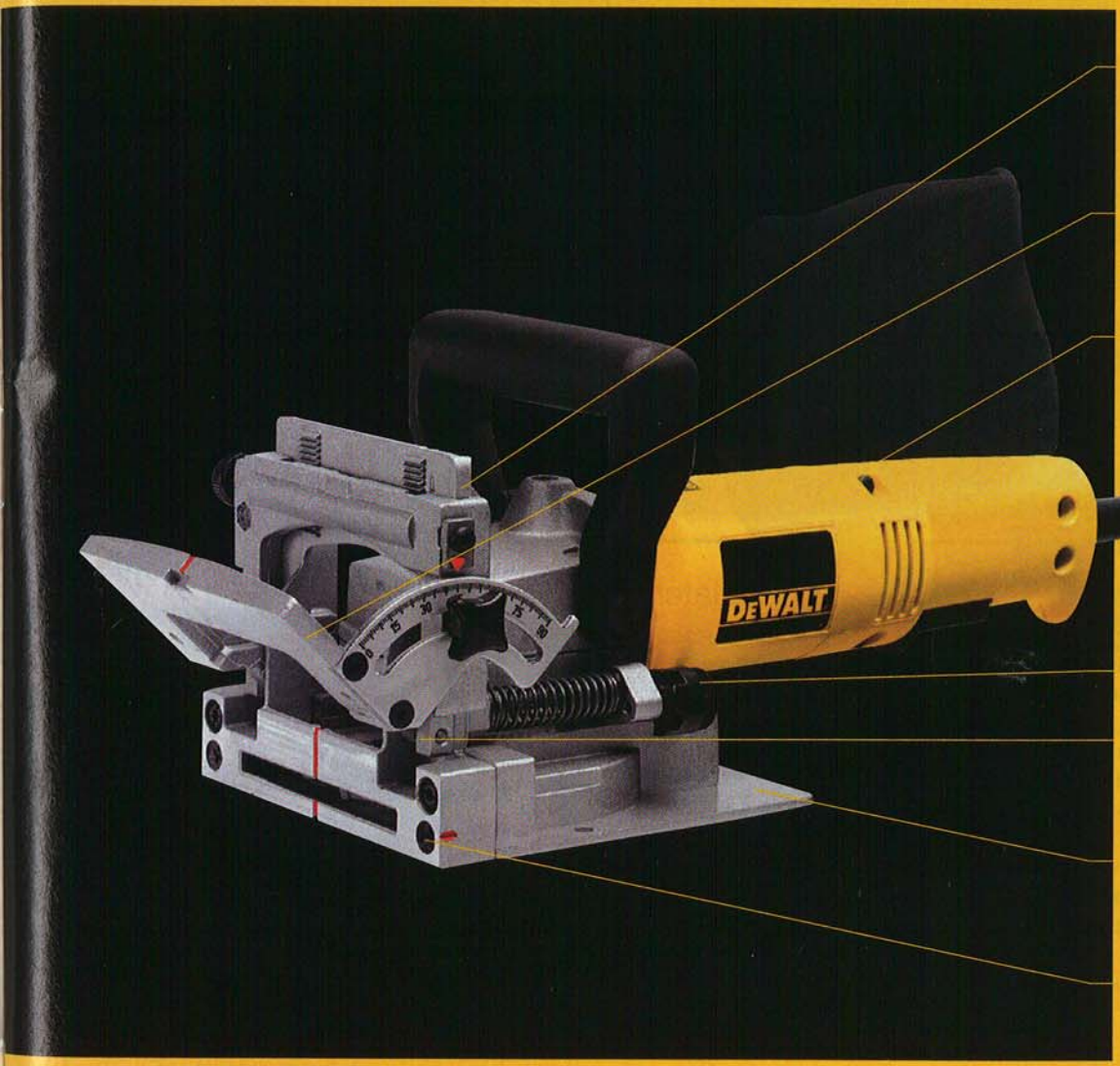
Top Shop Tip winner Lee Fishback turned hinges into stops, and now can turn wood on his new Carba-Tec 3XL mini lathe from Penn State Industries. Thanks, Lee!

TOP SHOP TIP



Continued on page 12

THE BEST TOOL IN THE JOINT.



Dual rack-and-pinion fence ensures blade and fence are always parallel, for accurate joints every time

Integral, one-piece fence is adjustable and tilts from 0° to 90° requiring no extra parts

6.5 amp, 10,000 rpm motor provides power for the hardest woods

Preset depth stops for all common biscuit sizes

45° locating notch in fence allows indexing off the outside surface of a mitered joint

Non-marring, heavy-duty aluminum shoe allows joiner to be clamped for stationary work

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Only the **DEWALT DW682K HEAVY-DUTY PLATE JOINER** makes it easy to construct a variety of accurate joints. The dual rack-and-pinion fence control guarantees precise vertical adjustments and precise fence alignments. And, for making cuts at any angle, the integral, adjustable fence tilts from 0° to 90°, then locks in place for unparalleled accuracy. Flush cuts can be made at 0° without removing the fence. Together, these advances ensure accurate joints every time. The DEWALT plate joiner also is easy to use and control, thanks in part to the ergonomically designed barrel grip and the extra-wide paddle switch. Because it's so versatile, it can be positioned on the inside or the outside face of a mitered joint. For precision that can't be beat, choose DEWALT. It's built into every one of our plate joiners. Guaranteed Tough.™

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DEWALT
High Performance Industrial Tools

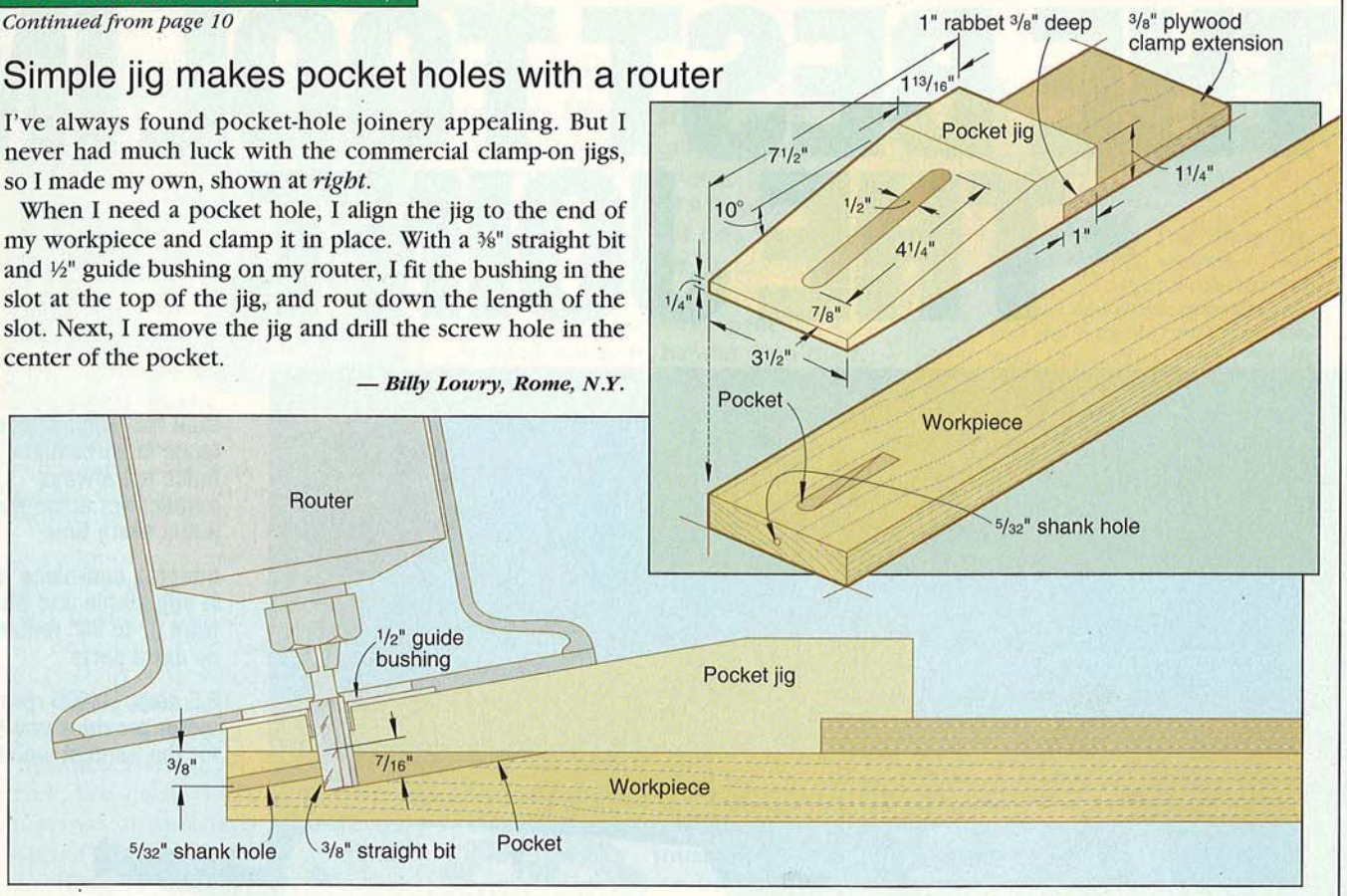
Continued from page 10

Simple jig makes pocket holes with a router

I've always found pocket-hole joinery appealing. But I never had much luck with the commercial clamp-on jigs, so I made my own, shown at *right*.

When I need a pocket hole, I align the jig to the end of my workpiece and clamp it in place. With a ⅜" straight bit and ½" guide bushing on my router, I fit the bushing in the slot at the top of the jig, and rout down the length of the slot. Next, I remove the jig and drill the screw hole in the center of the pocket.

— Billy Lowry, Rome, N.Y.

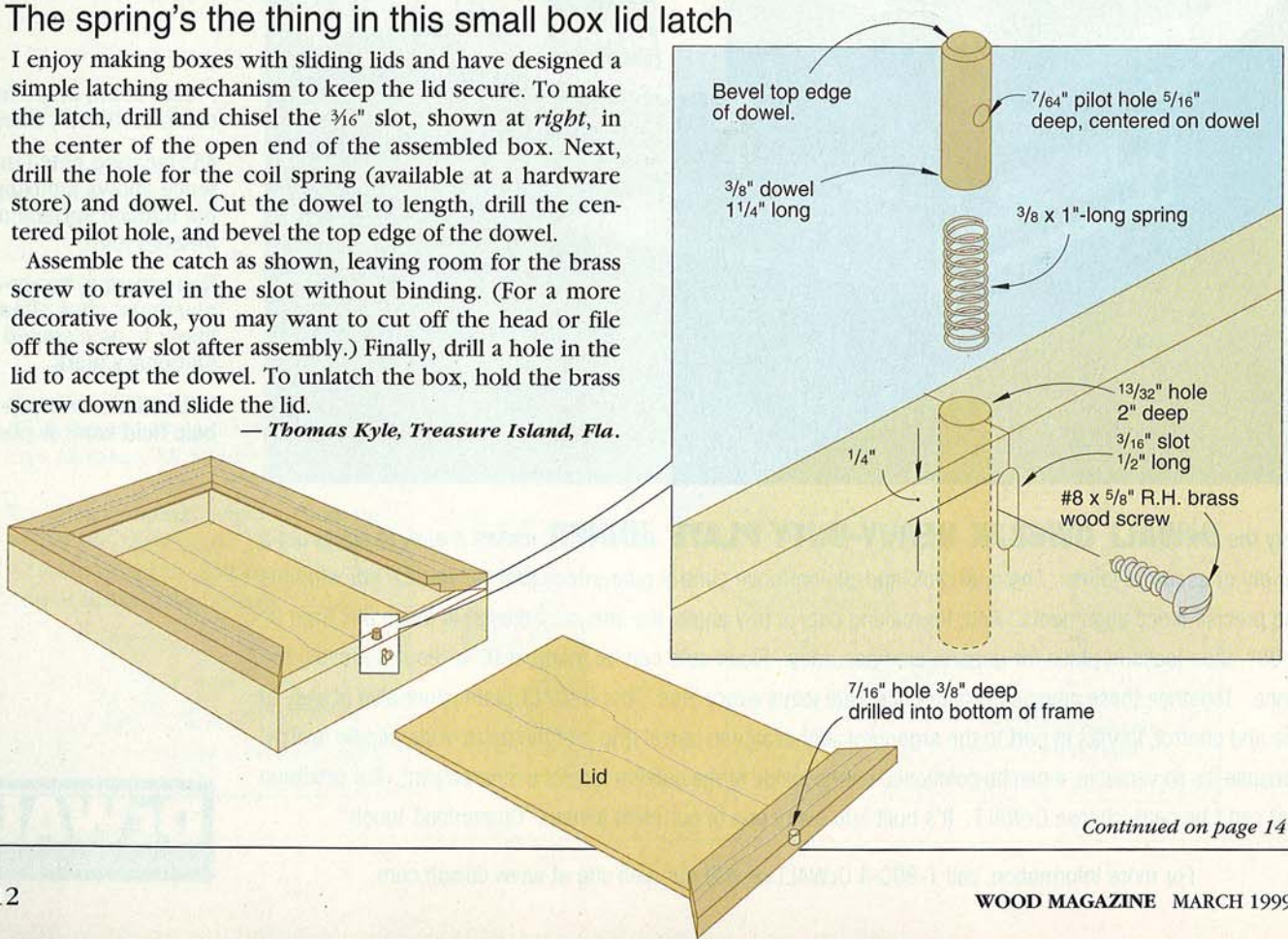


The spring's the thing in this small box lid latch

I enjoy making boxes with sliding lids and have designed a simple latching mechanism to keep the lid secure. To make the latch, drill and chisel the 3/16" slot, shown at *right*, in the center of the open end of the assembled box. Next, drill the hole for the coil spring (available at a hardware store) and dowel. Cut the dowel to length, drill the centered pilot hole, and bevel the top edge of the dowel.

Assemble the catch as shown, leaving room for the brass screw to travel in the slot without binding. (For a more decorative look, you may want to cut off the head or file off the screw slot after assembly.) Finally, drill a hole in the lid to accept the dowel. To unlatch the box, hold the brass screw down and slide the lid.

— Thomas Kyle, Treasure Island, Fla.


Bevel top edge of dowel.
7/64" pilot hole 5/16" deep, centered on dowel
3/8" dowel 1 1/4" long
3/8 x 1"-long spring
13/32" hole 2" deep
3/16" slot 1/2" long
1/4"
#8 x 5/8" R.H. brass wood screw
7/16" hole 3/8" deep drilled into bottom of frame
Lid

Continued on page 14

THE FASTEST FINEST FINISH.

DW411

Heavy-Duty 1/4 Sheet
Palm Grip Sander

DW423

Heavy-Duty 5" Random Orbit Sander
With Electronic Variable Speed

DW431

Heavy-Duty 3" X 21" Electronic
Variable Speed Belt Sander

DW421

Heavy-Duty 5" Random Orbit Sander

Dust-sealed switch provides increased durability

2.0 amp motor operates at 12,000 opm, providing maximum sanding speed for smooth finishes

Sealed, 100% ball-bearing construction delivers longer life

Dual-plane, counter-balanced fan reduces vibration and user fatigue

3/32 orbit diameter provides a tight orbital pattern for smooth finishes

The Controlled Finishing System™ maintains a controllable pad speed and minimizes gouging during startup

The family of **DEWALT HEAVY-DUTY SANDERS** was designed to produce the fastest, finest finishes possible, on all kinds of materials. Take the DW421 Heavy-Duty 5" Random Orbit Sander, which features the DEWALT-exclusive Controlled Finishing System™ to maintain pad speed and virtually eliminate gouging. Its 2 amp motor provides maximum sanding speed while being extremely comfortable to use. And, features like the dust-sealed switch contribute to longer tool life. If greater control is needed, there's the DW423 electronic, variable-speed sander. It has many of the same features, along with speeds that can be varied from 7,000 to 12,000 opm. For fine finishes, the DW411 orbital sander has a 2 amp motor and moves at 13,500 opm. And, for fast material removal, there's the DW431 belt sander. Its compact, light-weight design permits use in tight spaces or on vertical surfaces. So choose the best sander for the job. Choose DEWALT. Guaranteed Tough.™

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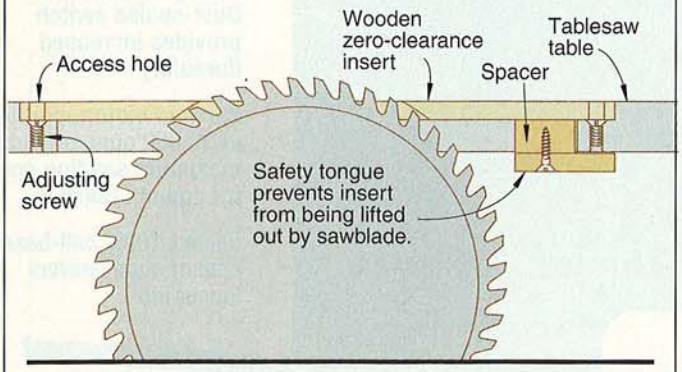
Continued from page 12

Tongue ties zero-clearance insert to tablesaw top

I read on your *WOOD* Online® discussion groups (www.woodmagazine.com) about homemade zero-clearance tablesaw inserts sent flying when caught by the blade. To prevent this, attach a safety tongue to the outfeed end of the insert as shown *below*. Tip the insert so the tongue catches under the saw table, and drop the insert in place.

— Dave Goldthorp, Dunrobin, Ont.

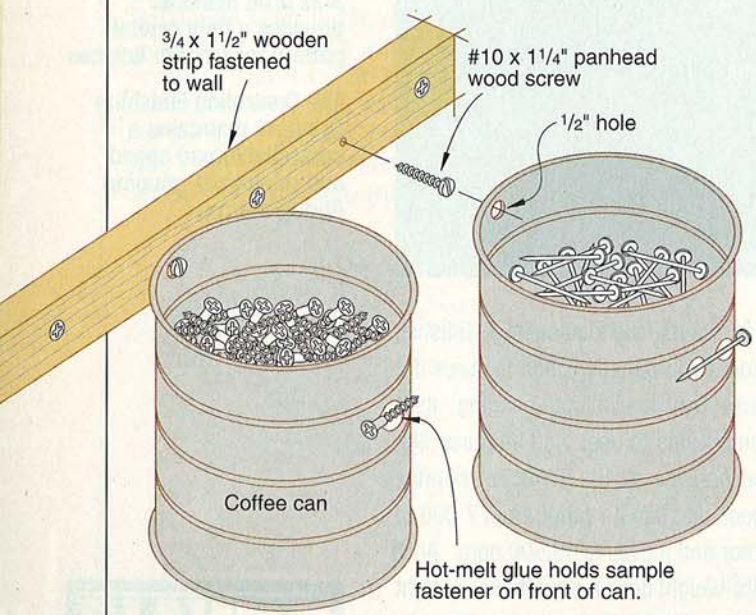


Now, here's a guy with a lot of hangups

When I set up my new workshop, I wanted a simple way to store the coffee cans full of screws and nails I've accumulated. But I didn't want to take up valuable shelf space with them.

So, I hung strips of ¾" stock on my wall, and spaced #10×1¼" screws a little farther apart than the diameter of the cans, leaving about ½" of the screw protruding. I then drilled a ½" hole in the lip of each can and hung them on the screws. To quickly identify each can's contents, I hot-glued a sample fastener to the outside, as shown *below*.

—Bill Rathbun, Highlands Ranch, Colo.

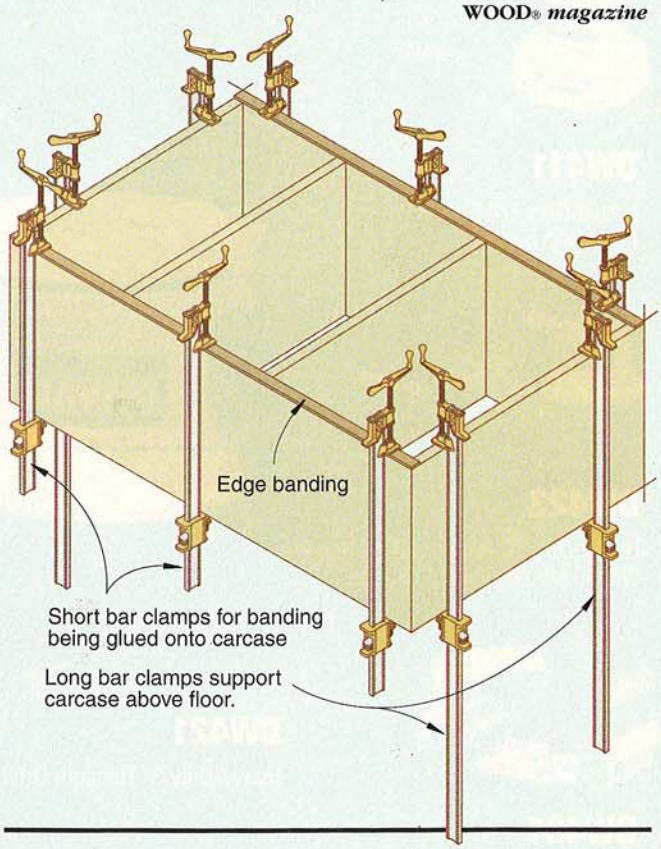

3/4 x 1 1/2" wooden strip fastened to wall
#10 x 1 1/4" panhead wood screw
1/2" hole
Coffee can
Hot-melt glue holds sample fastener on front of can.

Bar clamps give you a leg up when facing a carcase

The easiest way to glue banding to the face of a plywood carcase is with the case on its back. You can't lay it on a benchtop because you have no room for the clamps, and sawhorses always seem to get in the way.

Here's how I solve the problem. Before applying the banding, I clamp two long bar clamps to each end of the carcase, as shown *below*. I then glue the banding to the side pieces and clamp with bar clamps shorter than the "legs" on the ends. To face the ends, I move the "leg" clamps around the corner to the sides and re-clamp, then glue and clamp the banding to the ends.

— Jan Svec, assistant design editor/project builder, WOOD® magazine



A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Instantly age any country-style or primitive project with the distressing techniques we used for the antique-style decoy carving on *page 78*.
- Gluing and clamping a large lamination can be troublesome. On *page 64*, see how we laminated a cutting board in two sections to make the task easier.
- See how we used self-adhesive, self-lubricating nylon tape to ensure smooth-sliding drawers. The tape greatly simplifies carcase construction. Learn more on *page 30*.

THE PERFECT EDGE.

DW625
Heavy-Duty 3 HP
VS Electronic Plunge Router

DW610
Heavy-Duty 1-1/2 HP Router

DW621
Heavy-Duty 2 HP
Electronic Plunge Router

- Exclusive, built-in dust-extraction column attaches to standard shop vacuum to remove 95% of dust
- 8' rubber cordset
- 100% ball-bearing construction
- 2 HP motor provides the power to make the most challenging cuts
- Electronic, variable-speed motor runs at 8,000-24,000 rpm with constant speed under load to ensure a quality finish in all materials
- Innovative, rubber-coated knobs have plunge-lock and on/off switch built in for maximum control
- Rack-and-pinion, micro-fine depth adjuster provides fast and accurate depth settings
- Spindle lock button allows one-wrench bit changes
- 1/4"-1/2" collet capacity for greater versatility
- Converts from a fixed-base to a plunge router without extra parts or tools
- Precision-machined, 3-position turret stop

The family of **DEWALT HEAVY-DUTY ROUTERS** is the industry standard. These routers provide the highest degrees of accuracy, durability and power you can buy, along with the most innovative features available. For example, the DW621 includes the industry's only built-in dust-collection system. It also can convert from a fixed-base to a plunge router without additional parts or tools. And, its 2-horsepower motor provides the power needed to cut a variety of materials. The DEWALT line also includes the DW625, which boasts 15 amps and a 3-horsepower motor. And our fixed-base router, the DW610, was a 1998 *Wood Magazine* Editors' Choice. So get the best of all worlds, and get a DEWALT heavy-duty router. Guaranteed Tough.™

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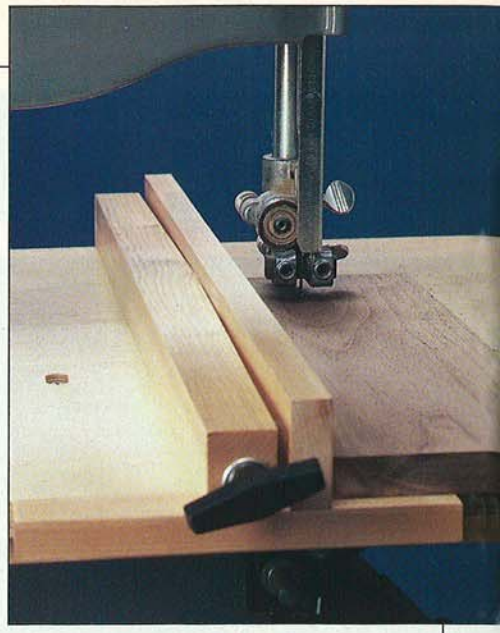
STRAIGHT-SHOOTING

Alignable Bandsaw Fence



Bandsaw blades don't always track straight, especially when you're making long rip cuts. The blade can wander off its intended path and ruin your work. The folks at bandsaw blade-manufacturer Lenox gave us a litany of causes: Too-low blade tension, a difference in sharpness or tooth set on one side of your blade, poorly aligned blade guides, even a buildup of sawdust between the blade and the wheel. To make ripping stock on your bandsaw an accurate task, build this alignable fence to use on your table, or with our precision bandsaw jig on *page 60*.

Begin by cutting the pieces and assembling them as shown in the drawing *below*. The body (A) tapers along one edge. Cut the body so the widest portion is centered on your bandsaw blade. When gluing and screwing the fence head (C) to the body, make sure the head is at a 90° angle to the non-tapered edge

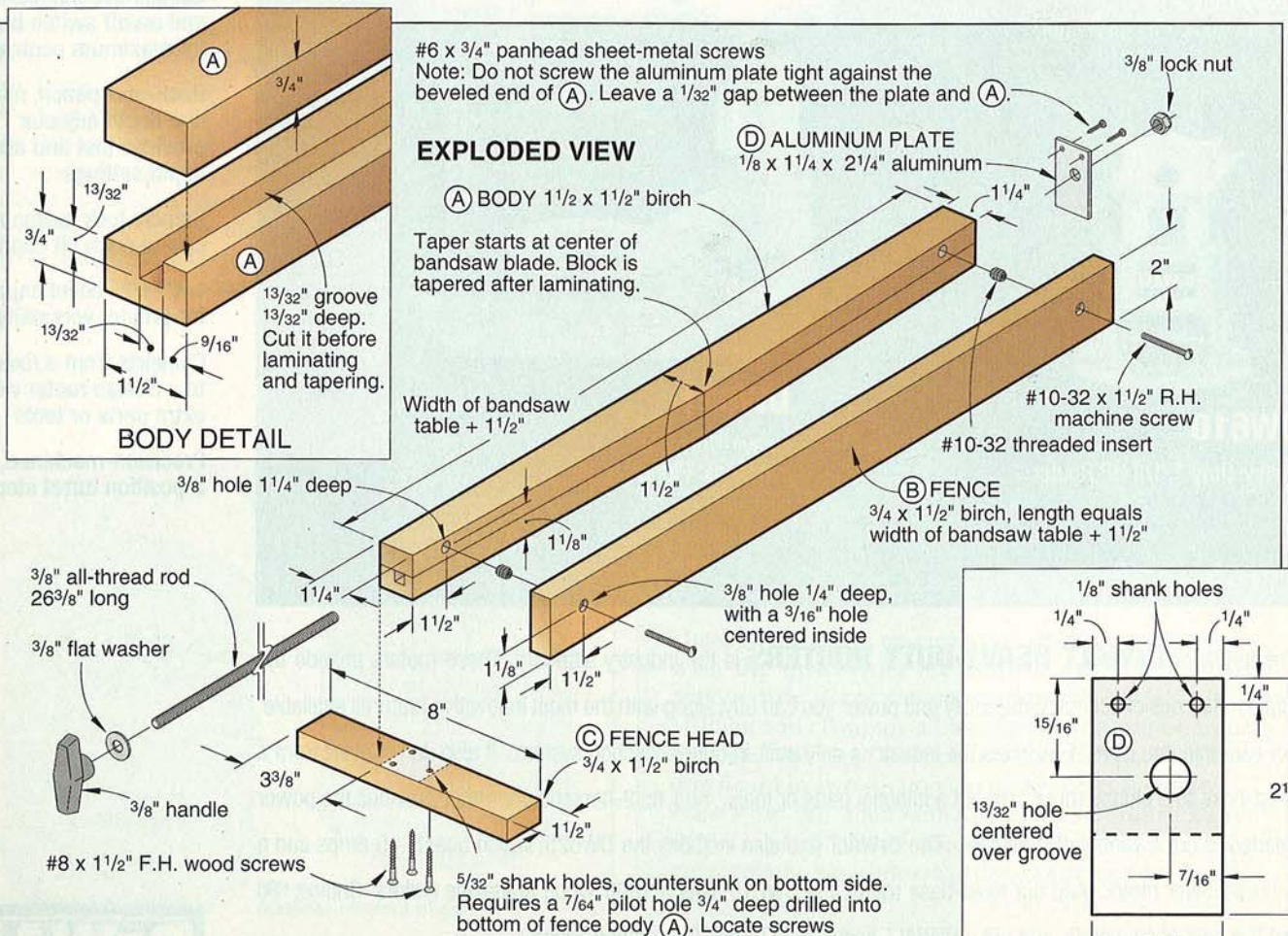
Once you have all the parts assembled, position the fence on your bandsaw table. Tighten the 3/8" handle to secure the fence in place.

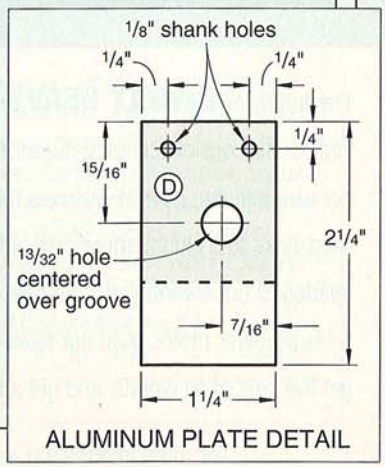
Test-rip on a piece of scrap, and alternately loosen one machine screw and tighten the other until the fence is parallel to the cutting track of the blade. For example, if the blade wanders in (toward the fence), bring the infeed end slightly closer to the body by turning out the outfeed screw and turning in the infeed screw. If it goes out from the fence, do the opposite. Loosen and tighten the screws the same amount so as not to bow the fence.

On shorter ripping cuts, such as when cutting shoulders on a tenon, blade travel usually isn't a problem. For these operations, remove the entire assembly and rotate it so the untapered edge of the body is closest to the blade.

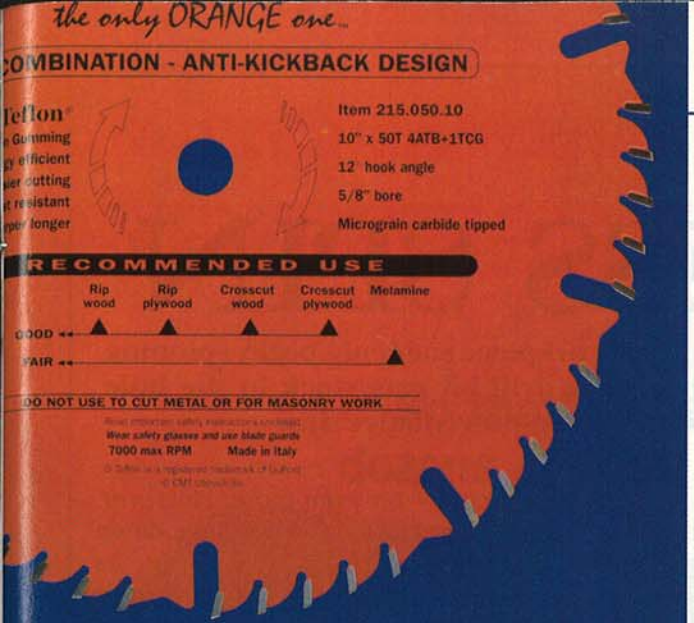
Project Design: Chuck Hedlund
Illustrations: Kim Downing
Photography: Hetherington Photography

BODY DETAIL


#6 x 3/4" panhead sheet-metal screws
Note: Do not screw the aluminum plate tight against the beveled end of A. Leave a 1/32" gap between the plate and A.
3/8" lock nut
EXPLODED VIEW
D ALUMINUM PLATE
1/8 x 1 1/4 x 2 1/4" aluminum
1 1/4"
A BODY 1 1/2 x 1 1/2" birch
Taper starts at center of bandsaw blade. Block is tapered after laminating.
2"
Width of bandsaw table + 1 1/2"
#10-32 x 1 1/2" R.H. machine screw
#10-32 threaded insert
3/8" hole 1 1/4" deep
1 1/2"
B FENCE
3/4 x 1 1/2" birch, length equals width of bandsaw table + 1 1/2"
1 1/8"
3/8" all-thread rod
26 3/8" long
1 1/4"
1 1/2"
3/8" hole 1/4" deep, with a 3/16" hole centered inside
3/8" flat washer
1 1/8"
1 1/2"
8"
C FENCE HEAD
3/4 x 1 1/2" birch
3 3/8"
3/8" handle
1 1/2"
#8 x 1 1/2" F.H. wood screws
5/32" shank holes, countersunk on bottom side. Requires a 7/64" pilot hole 3/4" deep drilled into bottom of fence body A. Locate screws to avoid groove.



ALUMINUM PLATE DETAIL



Now you can immediately recognize a CMT saw blade just as quick as you can a CMT router bit.

Because they're orange.

Introducing the new Teflon® coated saw blades from CMT. Now you get the same non-stick Teflon® protection and resistance to heat and friction with your saw blades that CMT has been giving you on router and boring bits.

The exclusive formula micrograin carbide tipped teeth together with the new Teflon® blade body will give you smoother cutting performance with noticeably superior results compared to standard blades. And unlike unprotected blades, the new CMT Teflon® coated blade won't gum up or get rusty. Instead the self-lubricating Teflon® helps you glide through your cuts while it minimizes wear and tear on your saw.

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Teflon®
Non Gumming
Energy efficient
Easier cutting
Rust resistant
Stays sharper longer

Item 210.080.10
10" x 80T ATB
5° hook angle
5/8" bore
Micrograin carbide

RECOMMENDED USE

	Rip wood	Rip plywood	Crosscut wood	Crosscut plywood	Melamine
EXCELLENT			▲	▲	▲
GOOD					
FAIR	▲	▲			

DO NOT USE TO CUT METAL OR FOR MASONRY WORK

Read important safety instructions enclosed
Wear safety glasses and use blade guards
7000 max RPM Made in Italy

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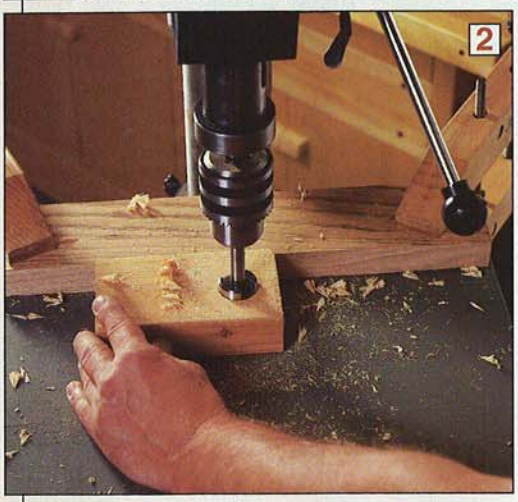
PUT A STOP TO DRILL-PRESS SPIN



Have you ever had your workpiece suddenly begin spinning uncontrollably when your drill bit gets stuck in the hole you're drilling? If so, try these preventative tips.

Tip 1. Stop long pieces with the column

A long workpiece that quickly begins spinning will hit the column at the rear of the drill press table. You can stop that movement, and potential damage to the wood, before it starts. Just place the workpiece in contact with the column before drilling it, as shown in the photo *left*. Keep in mind, though, that the drill turns clockwise (viewed from above), so always put the work to the left side of the column.

Tip 2. Halt short pieces with a stop block

You can stop short pieces that don't reach the column before they spin, too. As in the photo *left,* simply clamp a scrapwood stop block to the drill-press table to prevent rotation.

Tip 3. Securely clamp down the workpiece

When you drill deep holes, chances are good that the bit will jam when you back it out of the workpiece, causing it to spin. This happens because as the bit backs out, it catches the side of the hole slightly and lifts the workpiece off the table, embedding the bit even more. However, if you clamp the workpiece down at both ends to the table, as shown in the photo *below left,* or use your mortising jig hold-down, that can't happen.

Spindle speed helps, too

You also can combat a spinning workpiece by selecting the correct spindle speed for the type of wood and bit you're using. Although correct spindle speed won't prevent a spinning workpiece, following the guidelines won't unnecessarily contribute to it either. And drilling at the right speed for the bit and the stock solves several drill-press problems, including burning.

Some drill presses have a speed chart applied directly to the side of the spindle cover, inside the head, or printed in the owner's manual. If you can't find a chart to keep near the machine as a reference, order a comprehensive one that includes drill speeds for various bits and cutters, and for drilling in hard and soft woods, from *WOOD®* magazine. Just send $2 (U.S.) to *Drill Press Speed Chart,* WOOD *magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023.*

"Where Safety Begins" is written by Mike Gililland, a lifelong woodworker and an engineer with 25 years' experience designing and working with power tools to make them safer. He owns and runs a safety consulting firm.

Have a safety question? Send it with an SASE to: The Safety Man, *WOOD* Magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023. Not all questions received will be published, but all will receive an answer from the Safety Man.

Photographs: Hetherington Photography

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The Craftsman Redi-Drill™ has 5 bits designed to be stored inside the drill. Just select the bit you need and slide it into place. The keyless chuck locks it tight and you're ready to drill. Use the adjustable torque control clutch for driving screws. See the Redi-Drill™ in action at www.sears.com/craftsman.

TAKE THE REDI-DRILL™ 30-DAY TEST DRIVE!
If you don't find this the most unique drill you've ever used, bring it back to Sears for a full refund. As always, Sears policy is Satisfaction Guaranteed Or Your Money Back!

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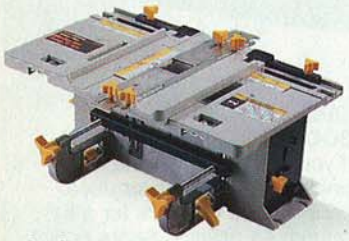
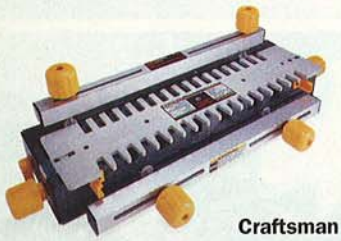
Craftsman leads the way in innovation, both big and small. Whether it's a major design breakthrough or just a small time-saving feature, Craftsman power tools keep getting better year after year!

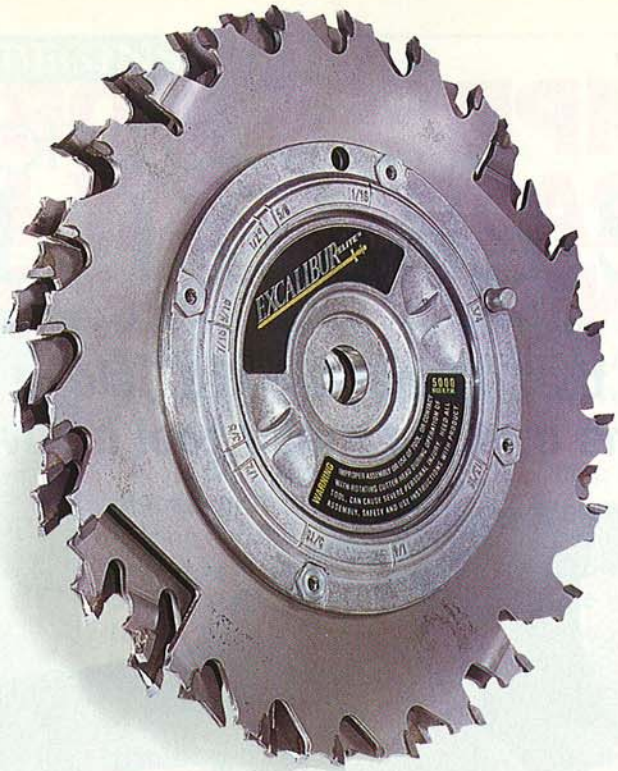


Craftsman mortise and tenon fixture lets you make beveled, mitered and straight joints with just a single router bit. It's fast, easy and the results are amazing.



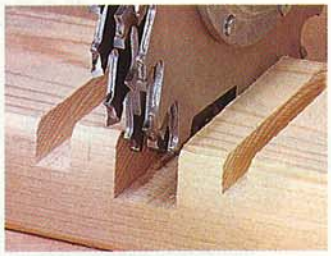
Craftsman deluxe dovetail fixture takes time and guesswork out of making solid, secure dovetail joints. It clamps down stock up to 16-in. wide and guides your router to make precise cuts that would impress a master cabinetmaker.

Discover more innovative tools at **www.sears.com/craftsman**



THE DO-IT-ALL DADO!
Craftsman 3-blade dado can be infinitely adjusted to cut groves from 1/4 to 13/16-in. Just dial the width you need. Carbide tipped blades lasts 3 to 5 times longer than regular blades.

No need to change or remove blades! Dial the width of cut you desire



Produces a true flat bottom groove.

THE FUTURE OF TOOLS,

Craftsman® innovation backed by 70 years of

INCREDIBLE ACCURACY!
Our new 8 1/2-in. miter saw now has an enclosed 3-bar rail system that enables you to cut wider workpieces with stunning precision.

More capacity to let you cut larger stock. 10-amp motor develops 2-HP.

Solid cast-iron body with solid cast-iron extension wings provide a large supporting workspace

ROOM TO GROW!
Our largest capacity 10-in. table saw has a 30-in. right and 24-in. left self-aligning rip fence. Controls are easier to reach and adjust. Expect accurate rips every time.

70 YEARS IN THE MAKING!

Satisfaction Guaranteed Or Your Money Back!

25,000 rpm no-load speed router for smooth cutting

Dual receptacles power both router and wet/dry vac

Precision die cast aluminum table top for smooth clean performance

YOU'RE IN TOTAL CONTROL!
Craftsman router table with extensions provides over 570 sq. in. of smooth surface that won't scratch your work. A multi-functional fence has a clear guard and special jointer fence for cutting straight edges.

Craftsman 2-HP router is powered by a 9-amp motor. Depth of cut can be adjusted from 0 to 1 1/2-in.

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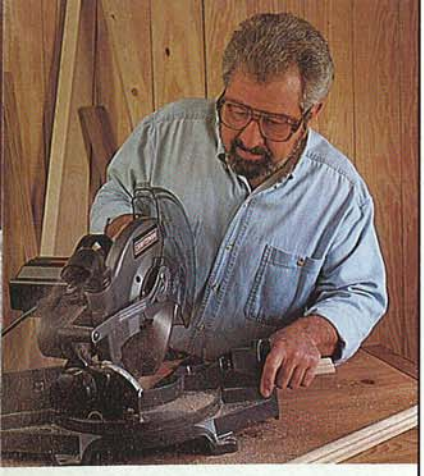
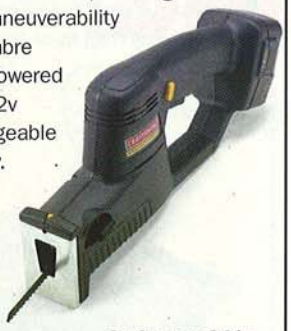


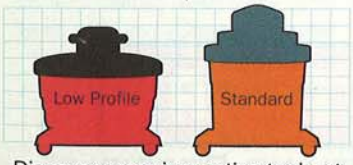
When Craftsman tools were first introduced, the goal was to make the most dependable, innovative yet affordable tools ever made. 70 years later, we've never stepped back off that lofty goal.

The **Craftsman Multi-saw** gives you the ability to perform a wide range of tough cutting tasks, anywhere! It cuts like a reciprocating saw with the maneuverability of a sabre saw. Powered by a 12v rechargeable battery.



Craftsman 24-in. scroll saw with two speed motor is ideal for intricate high-speed cutting. Capacity is greater than ever. Cuts up to 1 3/8-in. deep at 45° or 2-in. deep at 90°. Perfect for larger, more detailed projects.

Our **Craftsman low profile vac** breaks the mold for wet/dry vacs. It has a wider, shorter design that is dramatically more stable, putting an end to accidental tipovers.



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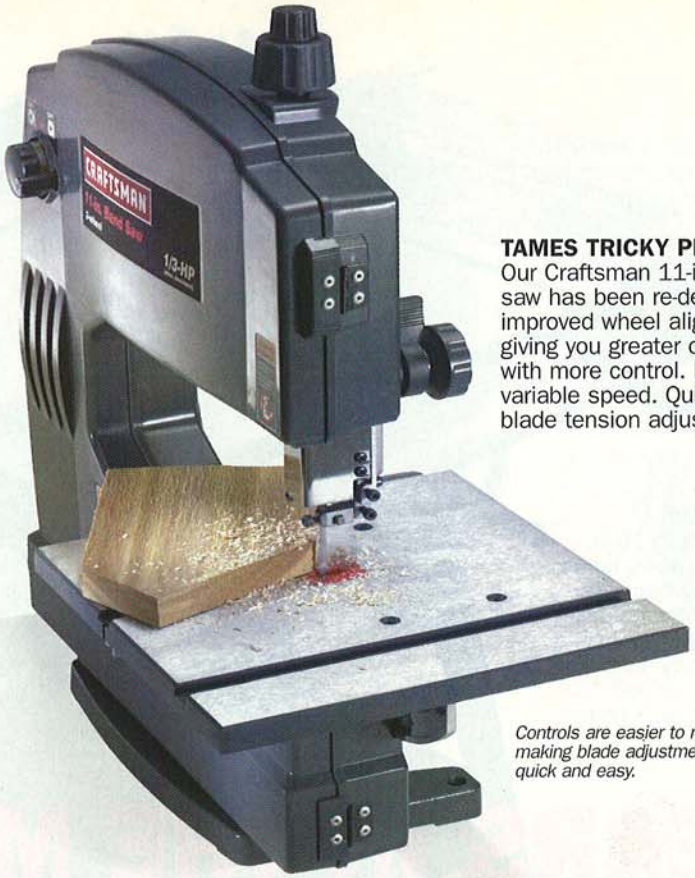


TAMES TRICKY PROJECTS!
Our Craftsman 11-in. band saw has been re-designed for improved wheel alignment, giving you greater capacity with more control. Electronic variable speed. Quick-release blade tension adjustment.

Controls are easier to read, making blade adjustments quick and easy.

RATED THE #1 QUALITY

American men have rated Craftsman® the best

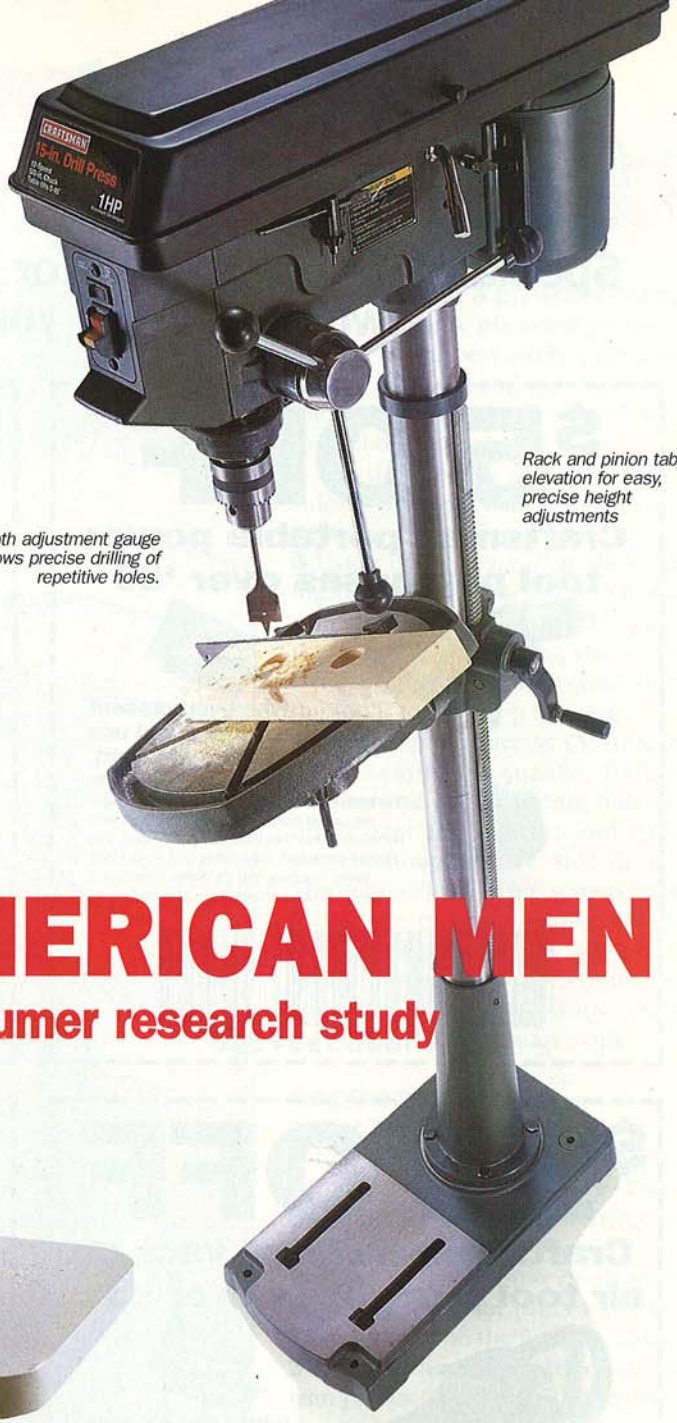
NO TIPPING ALLOWED!
Craftsman low profile 16-gallon wet/dry vac is designed shorter and wider to help prevent tipovers. Plus the hose locks into the base and won't come loose when pulled.

Detachable blower for powerful lawn and garage cleanup

The drain port is designed lower for more thorough draining

*Source: Jan. 1998 Equitrend® Brand Survey conducted by Total Research® Corporation. Top 5 quality brands as rated by American men: 1. Craftsman. 2. Mercedes Benz. 3. Kodak. 4. Chiquita 5. Hallmark.

COVERING ALL THE ANGLES!
Craftsman 15-in. drill press with an adjustable worktable that tilts up to 40 degrees. The powerful 12 speed motor gives you ultimate flexibility. Built-in worklight has its own separate switch.



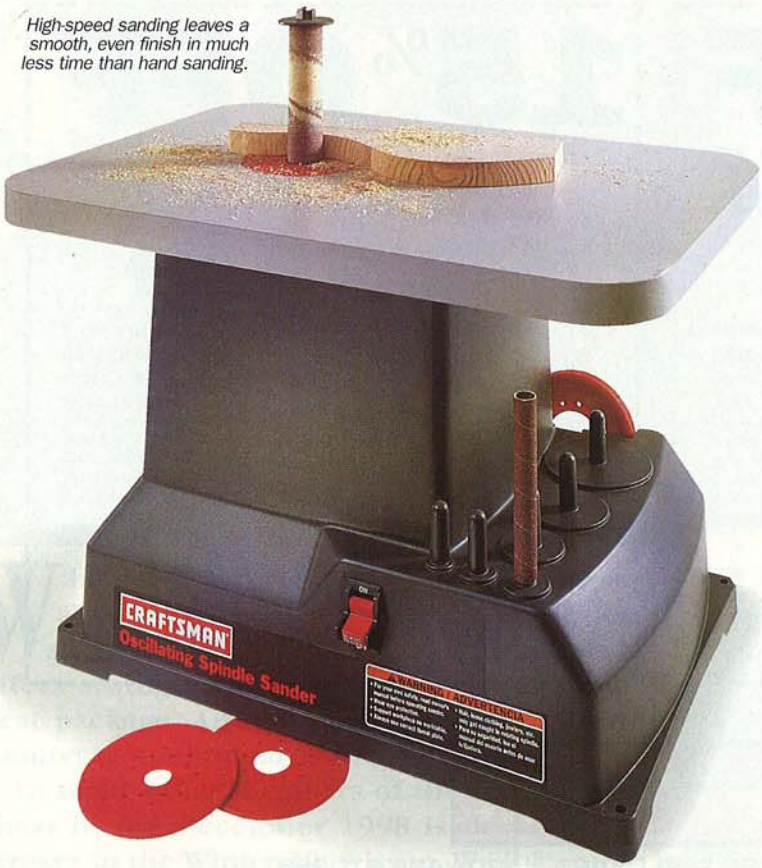
Depth adjustment gauge allows precise drilling of repetitive holes.

Rack and pinion table elevation for easy, precise height adjustments

BRAND BY AMERICAN MEN

quality brand in a leading consumer research study

High-speed sanding leaves a smooth, even finish in much less time than hand sanding.



SMOOTH CURVES AHEAD!
Craftsman oscillating spindle sander is designed for delicate sanding and shaping of curved areas. The spindle simultaneously turns at 2,000 rpm and oscillates up and down 58 times per minute.

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Country-Fresh Nightstand

Whether built as a stand-alone piece or as a member of our complete bedroom set shown at *right*, this oak nightstand offers storage and good looks in the same neat package. And you can choose between country or traditional styling.

To make other members of the set, see the chest in the December 1998 issue and the dresser in the Winter 1998 issue. We'll feature the bed in the April 1999 issue.

Start out with a plywood carcase

1 From ¾" oak plywood (walnut or cherry would be equally impressive), cut the sides (A) and top, bottom, and middle shelf (B) to the sizes listed in the Bill of Materials.

2 Cut the rabbets and dadoes in the sides (A) where dimensioned on the Parts View drawing on *page 32*.

3 Using the Carcase Top Shelf drawing on the Parts View for reference, drill the holes and form the slots in the top B for attaching the top (L). Drill the hole on the bottom side of the top B for the stop (Q) now.

4 Dry-clamp the carcase (A, B) together, checking for square. Drill and countersink the mounting holes centered over the rabbets and dadoes where shown on the Side drawing. The trim will cover the screws later.

5 Glue the carcase together, checking for square and that the edges are all flush. Drive the screws to further reinforce the assembly. Wipe off any excess glue with a damp cloth.

Add the trim and cover the screw holes

1 Cut the front and back trim pieces (C, D) to size from ⅜" stock. Cut the top and bottom trim pieces (E) to size from ¼" stock.

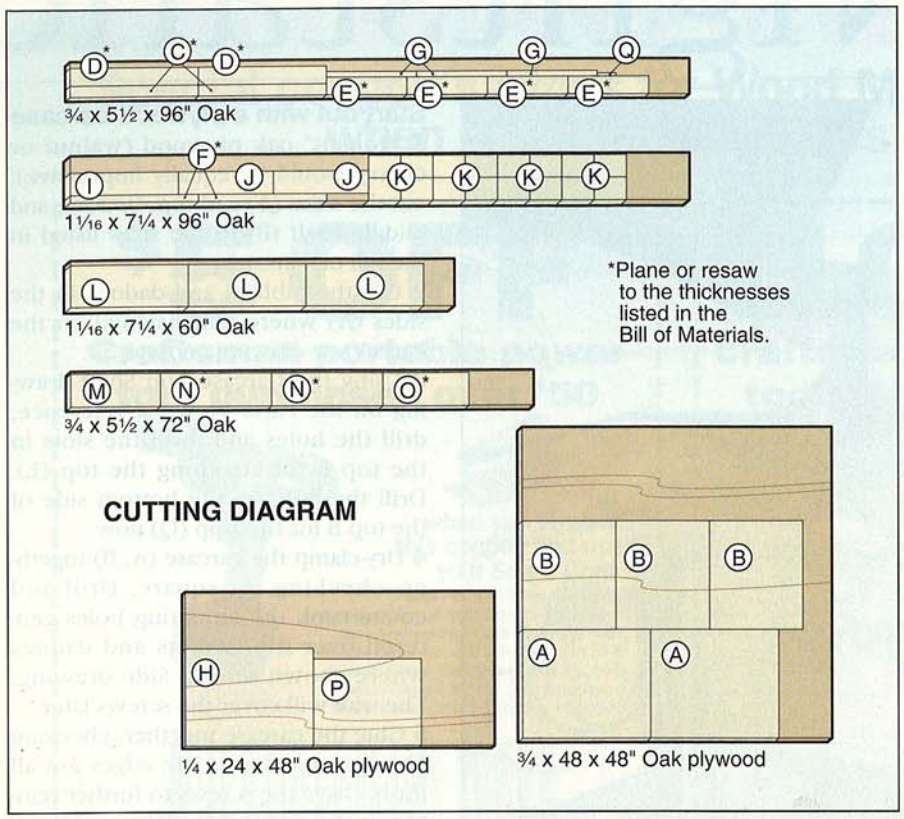
2 Rout ⅛" round-overs along the edges of the trim pieces (C, D, E) where shown on the Carcase drawing.

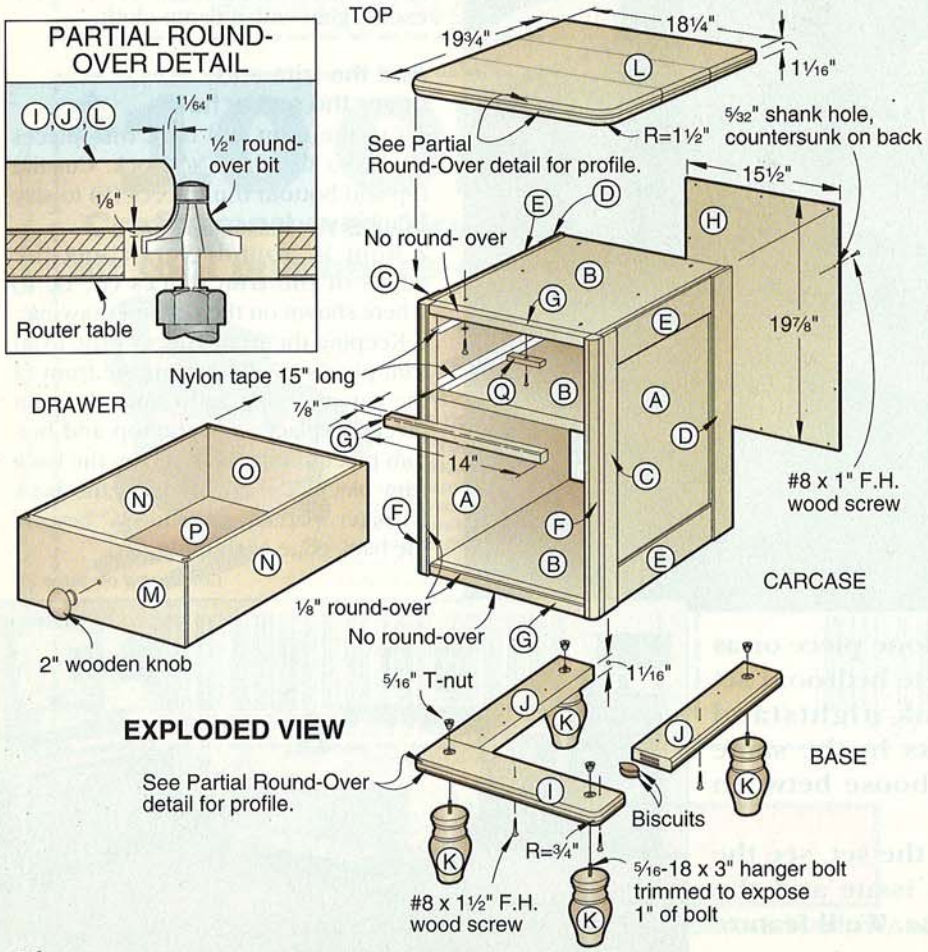
3 Keeping the front edges of the front trim pieces (C) flush with the front of the carcase, glue and clamp the trim pieces in place. Add the top and bottom pieces next, followed by the back trim piece (D). For housing the back (H) later, parts D protrude ¼" beyond the back edge of the sides (A).

Continued on page 26

Nightstand

Continued from page 25


¾ x 5½ x 96" Oak
1 1/16 x 7¼ x 96" Oak
1 1/16 x 7¼ x 60" Oak
¾ x 5½ x 72" Oak
*Plane or resaw to the thicknesses listed in the Bill of Materials.
CUTTING DIAGRAM
¼ x 24 x 48" Oak plywood
¾ x 48 x 48" Oak plywood



Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
CARCASE					
A sides	¾"	16¾"	19⅞"	OP	2
B top, btm. & middle	¾"	16¾"	14½"	OP	3
C front trim	⅜"	1¾"	19⅞"	O	2
D back trim	⅜"	2¾"	19⅞"	O	2
E top & btm. trim	¼"	2¾"	12½"	O	4
F vert. front trim	1"	1⅛"	19⅞"	O	2
G horz. front caps	¾"	⅞"	14"	O	3
H back	¼"	15½"	19⅞"	OP	1
BASE					
I front	1 1/16"	3½"	16¾"	O	1
J sides	1 1/16"	3½"	14¾"	O	2
K feet	3½" dia.		5"	LO	4
TOP					
L* top	1 1/16"	19¾"	18¼"	EO	1
DRAWER					
M front	¾"	5⅛"	13⅞"	O	1
N sides	½"	5⅛"	17¼"	C	2
O back	½"	5⅛"	13⅜"	C	1
P bottom	¼"	13⅜"	16¾"	OP	1
Q stop	⅜"	¾"	3"	O	1

*Cut parts marked with an * oversize. Trim to finished size according to the how-to instructions.

Materials Key: OP–oak plywood; O–oak; LO–laminated oak; EO–edge-joined oak; C–choice of oak, aspen, soft maple, or poplar.

Supplies: #8×1", #8×1¼", #8×1½", flathead wood screws; #10×1¼" panhead screws with flat washers; 4–5/16" T-nuts; 5/16-18×3" hanger bolts (not necessary if you buy the preturned feet); stain, clear finish.

Buying Guide

Hardware. For the country version we used two 2" oak knobs, #61710. For the traditional version we used 2–3½" brass bail pulls, #35402. Self-adhesive and self-lubricating nylon tape, 10 mil. thick by ½" wide by 10' long (1 roll needed), #70615. Rockler Woodworking and Hardware, 4365 Willow Drive, Medina, MN 55340. To order call 800/279-4441.

Turned feet. For the country version, use four 3½" diameter by 5"-long oak bun feet, #A0557HB5. For the traditional version, use four 5" diameter by 3"-long oak beaded bun feet, #A0551HB. For current prices, write Adams Wood Products, 974 Forest Drive, Morristown, TN 37814. Or call 423/587-2942 to place an order.

Continued on page 28

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FORD F-SERIES IS AMERICA'S BEST-BUILT TRUCK.* IT'S BEEN THE BEST-SELLING TRUCK FOR OVER TWO DECADES. AND, WITH OVER 50 YEARS OF PROVEN TOUGHNESS BEHIND IT, YOU'RE NOT GOING TO FIND A BETTER TRUCK ANYWHERE. NOT EVEN IF YOU LOOK UNDER A ROCK.

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*Based on an average of consumer-reported problems at 3-months' ownership in a survey of Ford under-8500-lb.-GVWR models and competitive models.

Nightstand

Continued from page 26

4 To cap the front of the carcase and hide the plywood plies, cut the front trim pieces (F) to size. Before cutting the pieces, measure the width of the carcase sides plus trim (ours measured 1⅛"), and cut the trim pieces (F) to match. See the Top Section View on the Parts View for reference. With the edges flush, glue and clamp the pieces in place, or use the method in the photo *below* to keep the inside edges flush when gluing the trim pieces to the sides.

5 Cut the trim pieces G to fit between the trim pieces F.

6 Rout the ⅛" and ½" round-overs on parts F where shown on the Carcase drawing. Rout the ⅛" round-overs along the bottom edge of the top G, both edges of the middle G, and the top edge of the bottom G. Glue and clamp the three front trim pieces (G) in place.

7 Measure the opening, and cut the back (H) to size from ¼" plywood.

3 Mark and cut a ¾" radius on the front corner of the base front (I).

4 Rout a partial round-over on the top and bottom outside edges of the base where shown on the Exploded View drawing and accompanying Partial Round-Over detail.

5 Drill the holes in the base where shown on the Parts View drawing.

6 To get the feet (K) for this dresser, you can either turn your own using the patterns on *pages 32 and 34*, or order preturned feet from the source listed in the Buying Guide at the bottom of the Bill of Materials. If you turn your own, laminate stock to form blanks measuring 4" square (3½" after turning) by 5" long. Then, refer to the full-size pattern to turn your own. Drill a pilot hole centered in the top of each foot, and add a hanger bolt (the preturned feet come with a hanger bolt already threaded in place).

7 Use a hacksaw to trim the protruding end of each foot hanger bolt so only 1" protrudes. The top of the bolt shouldn't protrude above the top surface of the base.

8 Insert a 5/16" T-nut into each ⅞" counterbore (four total) in the top surface of the base.

9 With the T-nuts in place, clamp the base to the carcase with the back edges flush and centered from side to side. Using the previously drilled mounting holes in the base as guides, drill pilot holes into the bottom of the dresser, and screw the base in place.

Now, attach the edge-joined top to the carcase

1 From 1 1/16" stock (commonly called five-quarter stock), rip enough narrower pieces to form the top (L). Your initial lamination should be 1" longer and ½" wider than needed.

2 Edge-glue the boards to form the top. Later, trim the top to the finished size listed in the Bill of Materials.

3 Mark and cut a 1½" radius on the front corners of the top. Cut and sand the corners to shape. Rout the partial round-overs along the front and sides of the top. See the Partial Round-Over detail for reference.

4 Screw the top to the carcase.

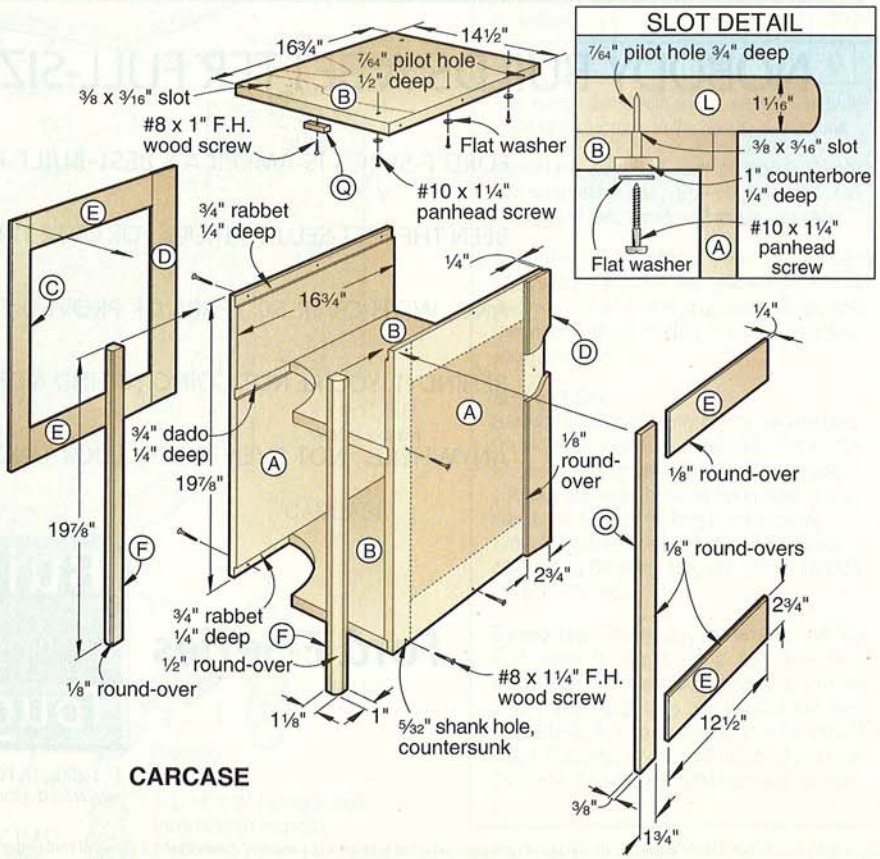
Continued on page 30

Make a sturdy base for a stout carcase

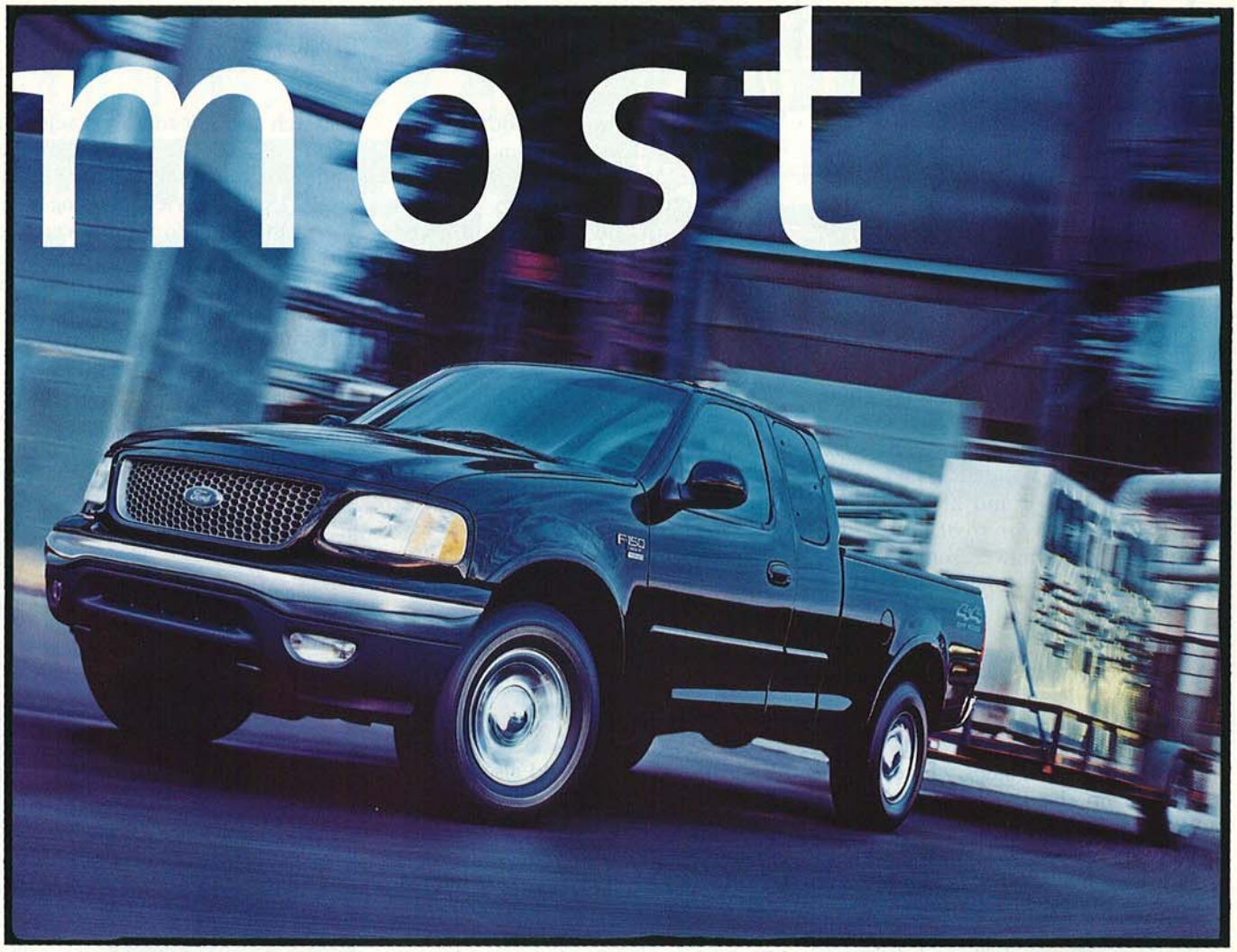
1 Cut the base front (I) and sides (J) to the sizes listed in the Bill of Materials.

2 To join the base sides (J) to the front (I), use a biscuit or spline joint. Glue and clamp the sides to the front, keeping the outside edges and surfaces flush. Check for square.

Cut the horizontal trim pieces (G) to fit snugly between the sides. Then, fit the vertical trim pieces (F) against the Gs, to keep the inside edges flush.



CARCASE



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OPT FOR THE 5.4L TRITON™ V-8 ON YOUR NEW FORD F-150 AND YOU'VE GOT THE MOST PULLING POWER.* THE MOST TORQUE. MORE THAN ANYTHING ELSE IN ITS CLASS. MORE THAN CHEVY. MORE THAN DODGE. AND YOU'RE DRIVING ONE OF THE BIGGEST, TOUGHEST TRUCKS EVER BUILT FORD TOUGH. IT DOESN'T GET MUCH BETTER THAN THAT.

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*Properly equipped.

Nightstand

Continued from page 28

Build the drawer to complete the construction

Note: *Measure the drawer openings before constructing the drawer. The drawer needs to be ⅛" less in height and width than the opening. Also, the front of the drawer should sit ⅛" back from the front of the front trim pieces (G).*

1 Cut the drawer front (M) to size from ¾" straight-grained oak. Then, from ½" stock rip and crosscut the sides (N) and back (O) to the sizes listed in the Bill of Materials.

2 Follow Steps 1 and 2 on the four-step drawing at *far right* to machine the ends of the drawer front (M).

3 Follow Step 3 on the drawing to cut a ¼" rabbet ¼" deep along the ends of the drawer back (O).

4 Refer to Step 4 on the drawing to machine the mating dadoes on the drawer sides (N)

5 Cut the remaining grooves in the drawer front and sides where dimensioned on the Drawer drawing to house the plywood bottom (P). Make sure the groove width is the same as the thickness of the plywood you'll be using for the drawer bottom.

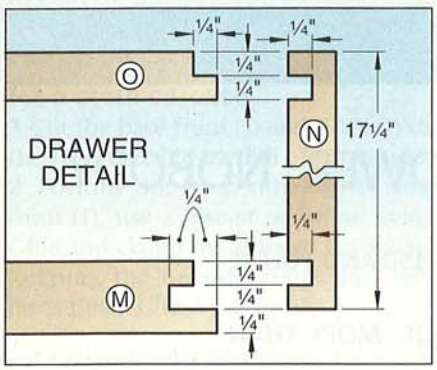
6 Cut the drawer bottom (P) to size from ¼" plywood.

7 Dry-clamp (no glue) the drawer together to check the fit and check for square. To assemble the drawer, use white glue because it dries slower, giving you more working time. Glue the front piece to one side piece. Add the drawer back, slide the plywood bottom in place, and then glue the other side in place. Clamp the assembly together, taking opposing diagonal measurements from the corners to check for square.

8 Mark the location, and drill the mounting holes in the drawer front to accept your particular hardware.

9 To create the look of an equal reveal on the top and bottom of the drawer when slid in place in the cabinet, rout the bottom of the drawer front with a 15° chamfer bit (we used a CMT 857.503.11). You could also sand or plane the 15° chamfer along the bottom edge. The key is to keep the chamfered edge straight.

10 Cut the drawer stop (Q) to size, and drill the mounting holes in it.



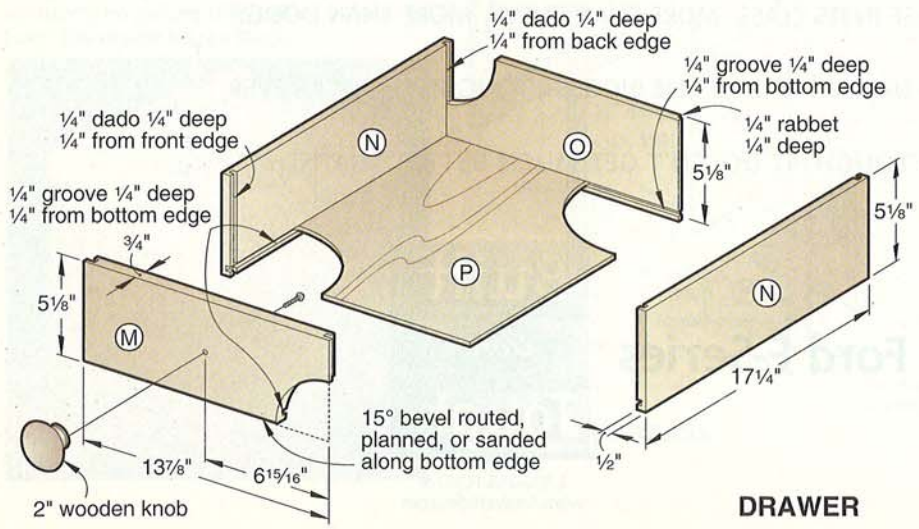
Finishing and final assembly

1 Finish-sand the carcase, drawer, and top. Finish cabinet as desired. For a country finish, see the article on *page 72* of December 1998 issue of *WOOD* (#110), or stain the cabinet and drawer front and protect them with a clear finish as shown in the upper left-hand corner of the *opposite page*.

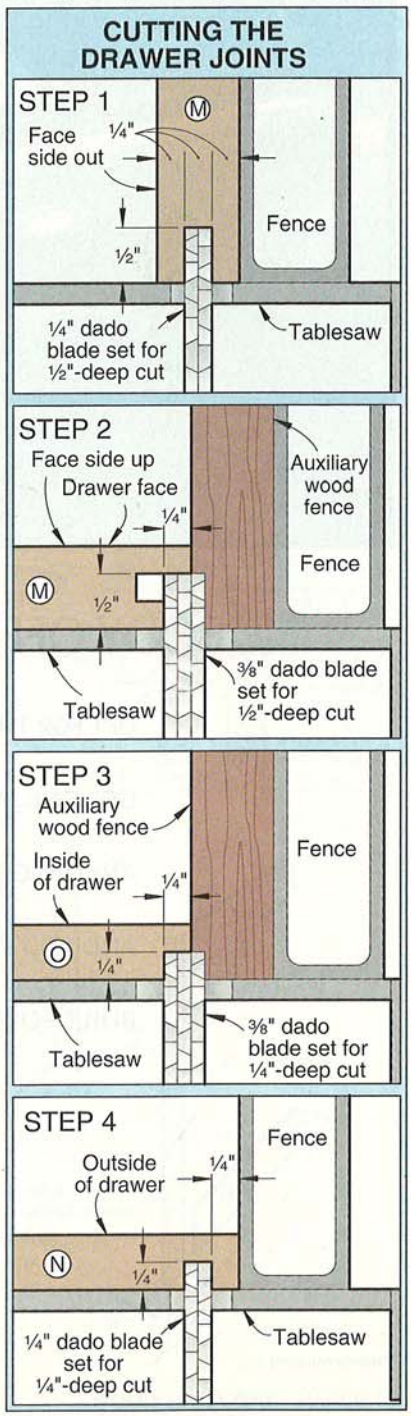
2 Attach the self-adhesive, self-lubricating nylon tape (see the Buying Guide for our source) where shown on the Exploded View drawing.

3 Add the knob to the drawer, slide the drawer in place, and screw the stop (Q) in place. Mark the locations, drill the countersunk pilot holes, and screw the back (H) in place.

Written by Marlen Kemmet
Project Design: Jeff Hayes
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Hetherington Photography



DRAWER



Continued on page 32

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HEY, WE KNOW IT'S A FREE COUNTRY AND EVERYTHING, BUT WHY WOULD YOU WANT TO DRIVE AROUND IN THEIR 3-DOOR EXTENDED CAB WHEN FORD F-SERIES SUPERCAB GIVES YOU 4 DOORS STANDARD? 4 DOORS STANDARD FOR THE PRICE OF THEIR 3-DOOR.* 4 DOORS STANDARD FOR EASIER ACCESS. A FULL LINE OF 4-DOOR SUPERCABS. THAT'S A STANDARD NOBODY ELSE LIVES UP TO.

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*Based on MSRP comparison of Chevrolet and Ford base models.

Nightstand

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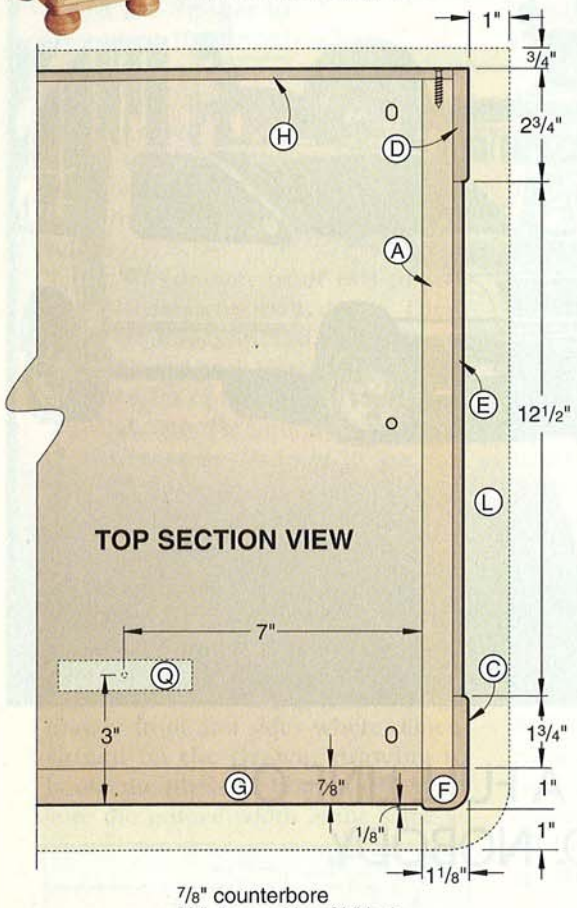

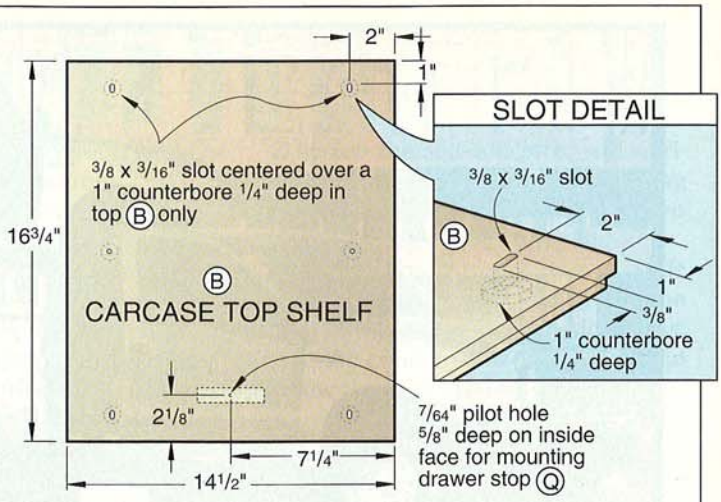

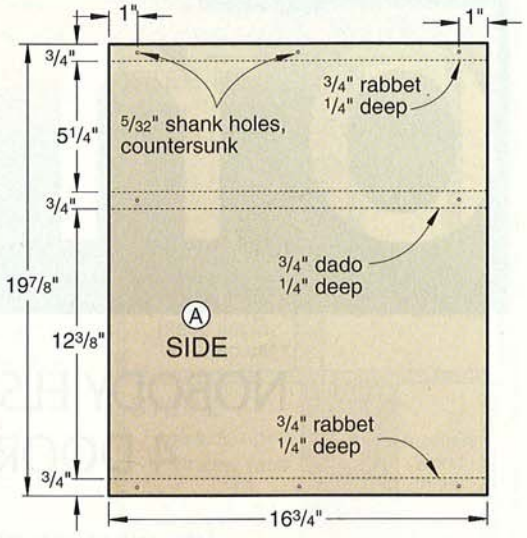

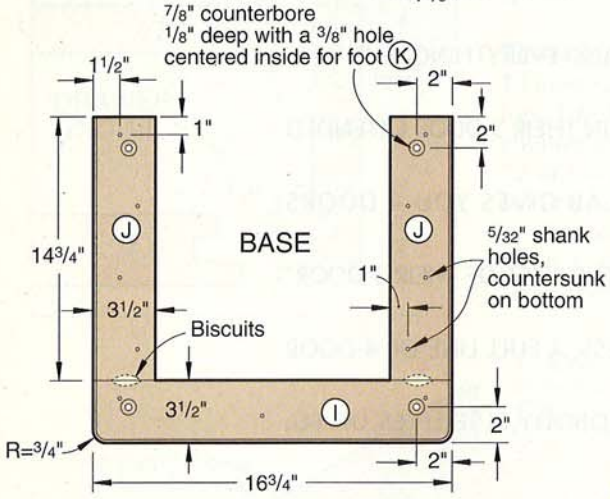

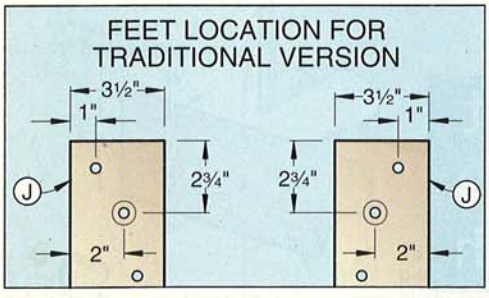

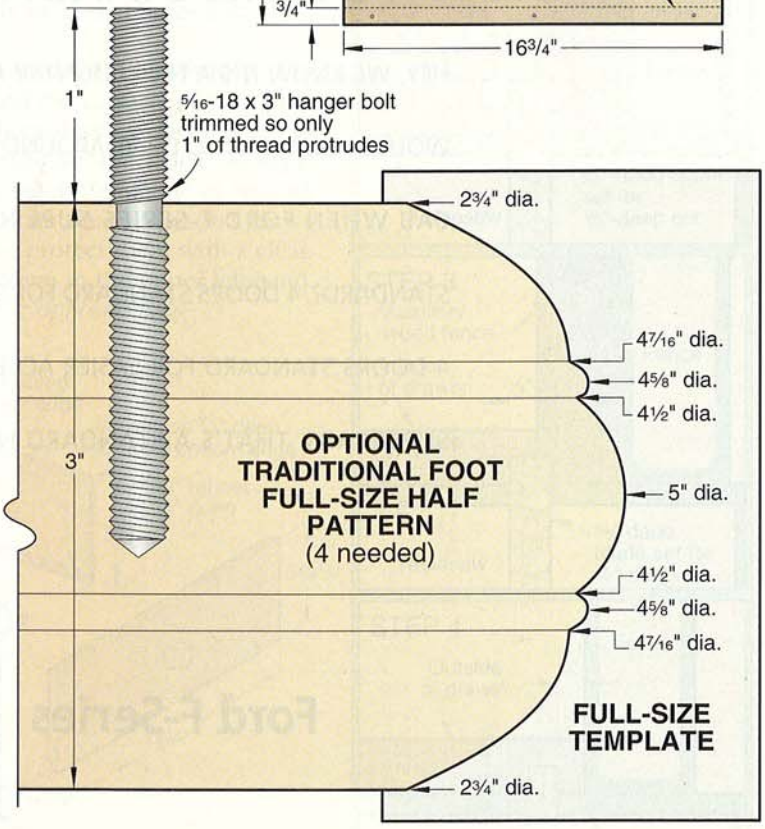

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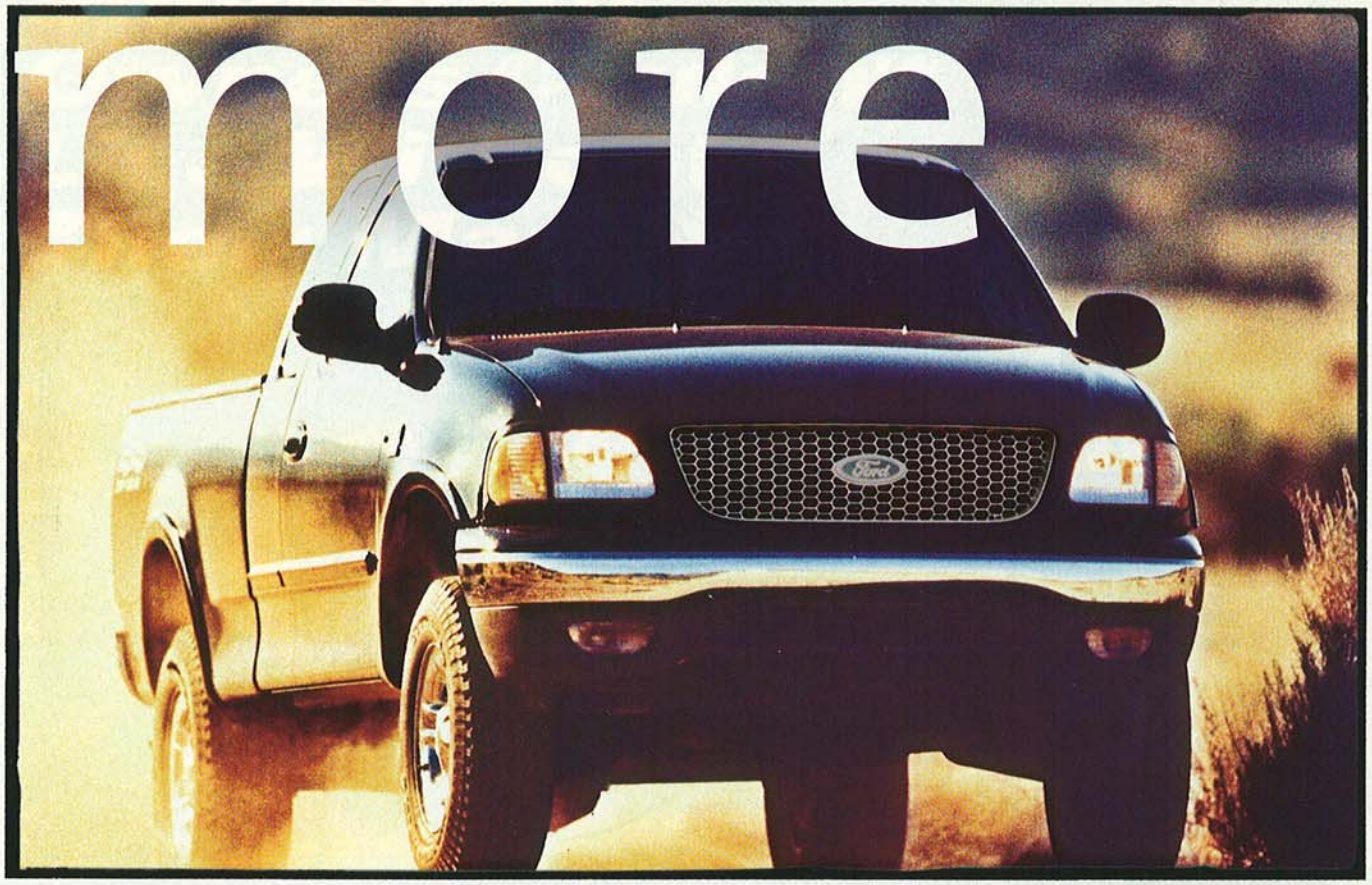

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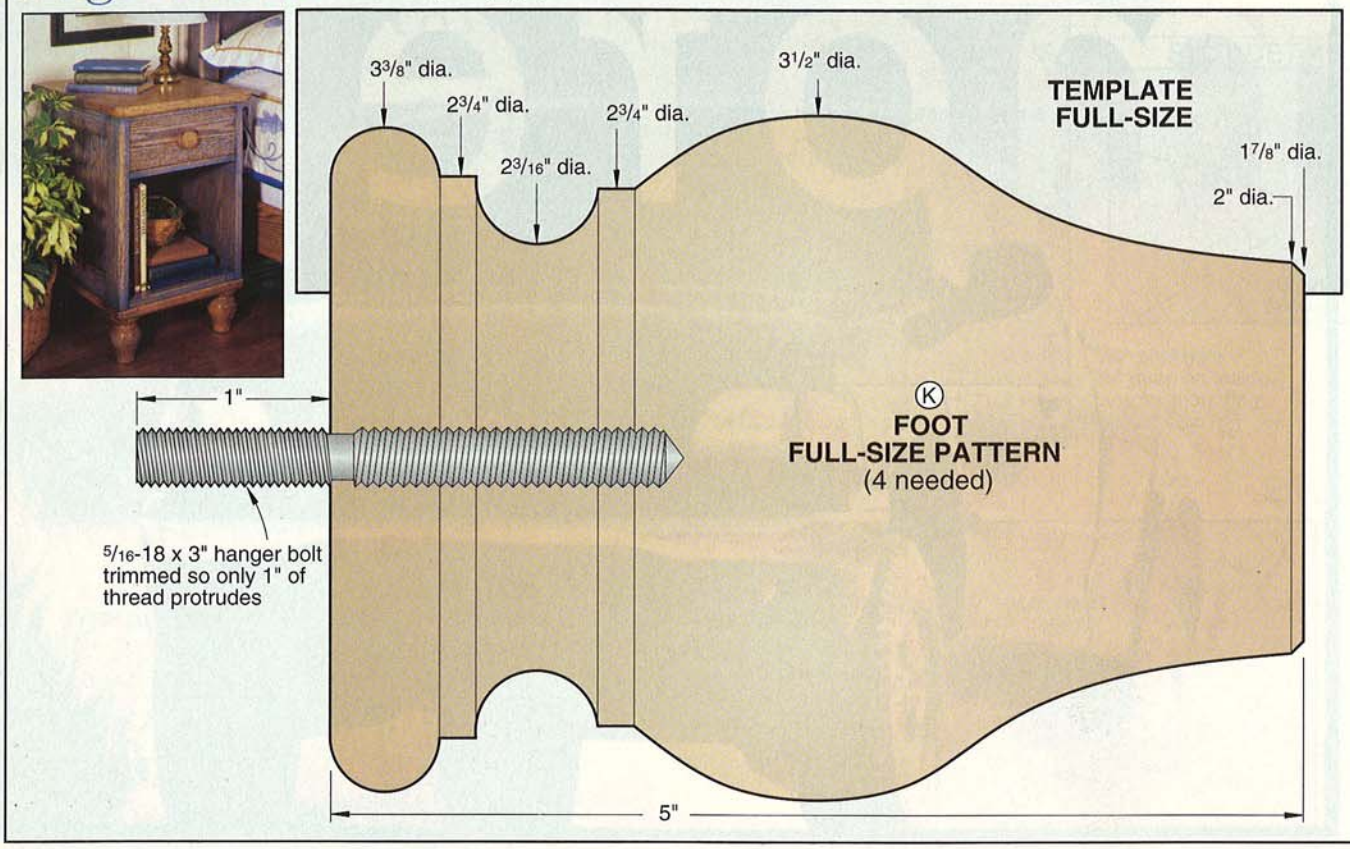
Continued from page 32



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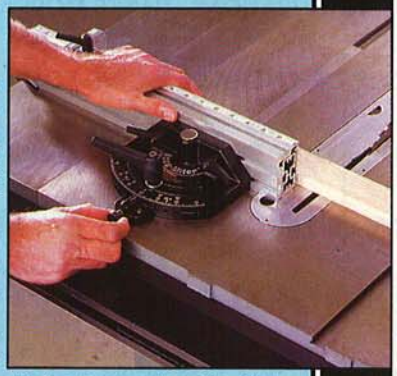

We do not recommend operating without the saw blade guard, as is shown here.
US Patent #5,038,486

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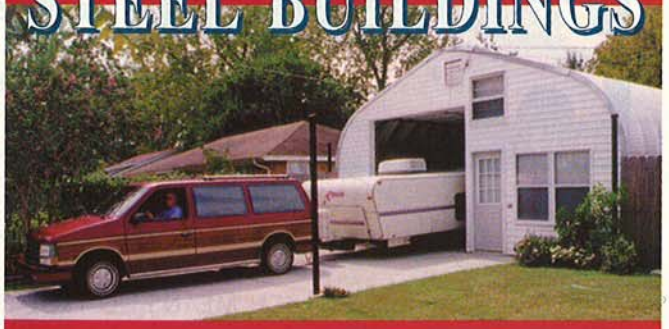

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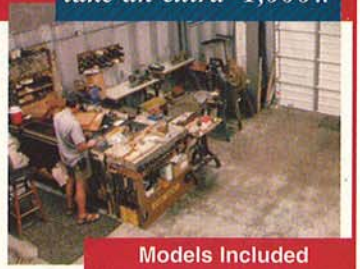

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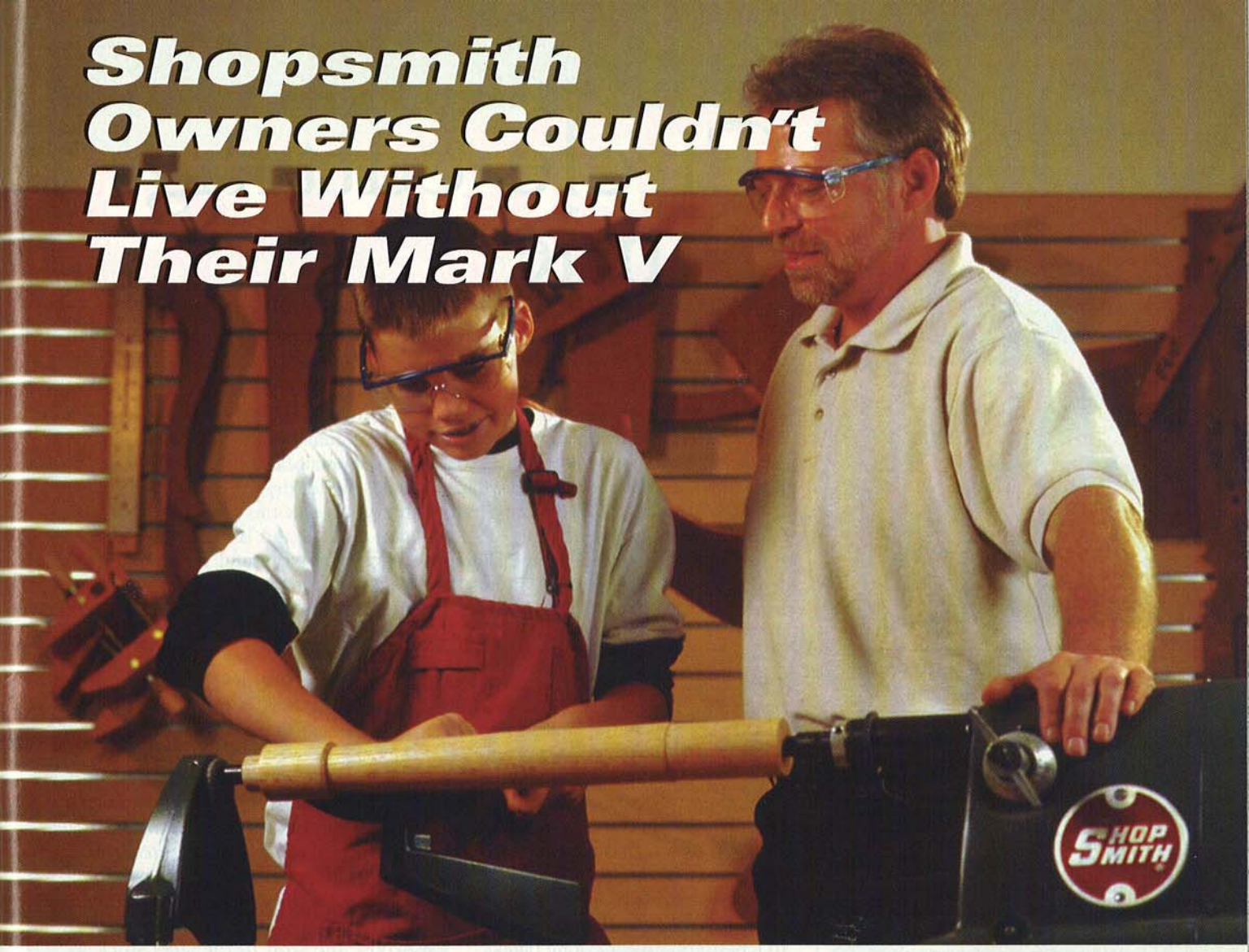

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Circle No. 650

FSD1

Bandsaw Multi-Jig
Circle-cutting Guide

See related article on page 60

1 Crosscut two pieces of ⅛×¾" flat steel to 18" long. Cut two pieces to ⅛×1×17/16" for the stop. See the Circle-Cutting Guide drawing for reference. Drill and tap the holes in the stop pieces where shown on the drawing.

2 Cut the arms (F) to size from ½" solid stock (we used birch).

3 Cut the arm spacers (G) and sliding trammel (H) to size plus 12" in length from ½" stock.

4 Cut a ¼" rabbet ¼" deep along the bottom outside edge of each arm (F) where shown *below*. Test-fit the newly created tenon on each arm into the mating slots in the table (A).

5 Cut a ⅛" groove ⅜" deep, centered along the inside edge of each arm (F) and along the extra-long blanks for the arm spacers (G) and sliding trammel (H). Check that the ⅛×¾×18" flat steel stock slides smoothly without slop in the grooves in parts F, G, and H. Then, crosscut the parts G and H to length from the 12"-long blanks.

6 Drill a ⅜" hole, centered, in the sliding trammel (H). Drive a ¼" threaded insert square into the sliding trammel.

7 Hacksaw the heads off two ¼" hexhead bolts with smooth upper shanks. Cut to ¾" long to form the two ¾"-long trammel points like those shown on the detail *below*.

8 Assemble (dry-fit) the flat steel into the groove in the arms (F), and position parts G and H between the steel stock. The trammel (H) must slide back and forth on the flat steel. Sand the grooves in the trammel if necessary until it slides freely.

9 Epoxy the steel stock into the grooves in the arms (F). Immediately remove any excess epoxy. Later, position the spacers (G) and sliding trammel (H) between the two assemblies, keeping the ends of the spacers flush with the end of the arms. Epoxy the spacers in place; *the trammel must be left free to slide on the steel stock.* Rub a bit of paraffin on the bars if necessary so the trammel slides smoothly.

10 Using the ¼-20 machine screw, secure the stop to the steel stock so stop will slide on the flat steel stock.

11 Cut the trammel disc (I) to shape, and drill a 7/32" hole in its center.

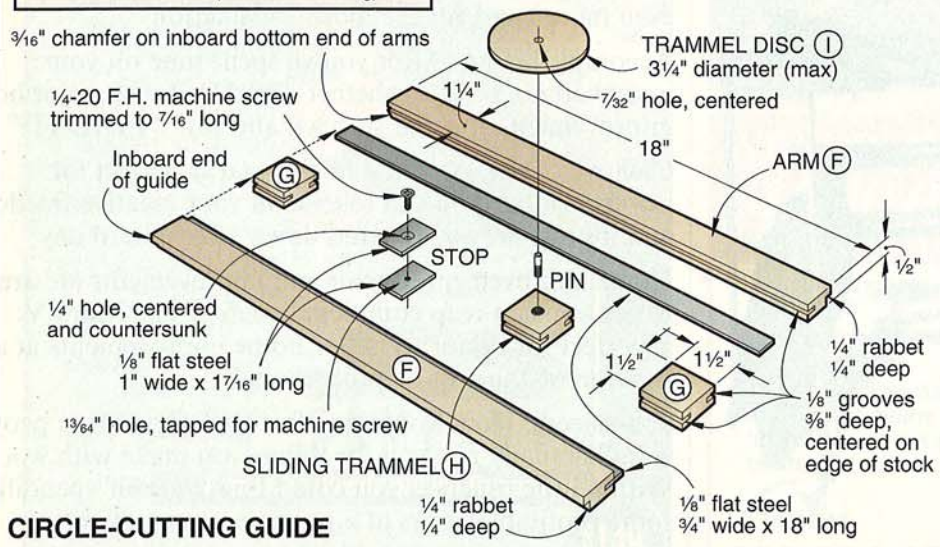
Circle-cutting guide Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
F arms	½"	1¼"	18"	B	2
G* arm spacers	½"	1½"	1½"	B	2
H* sliding trammel	½"	1½"	1½"	B	1
I trammel disc	¼"	3¼" dia.		H	1

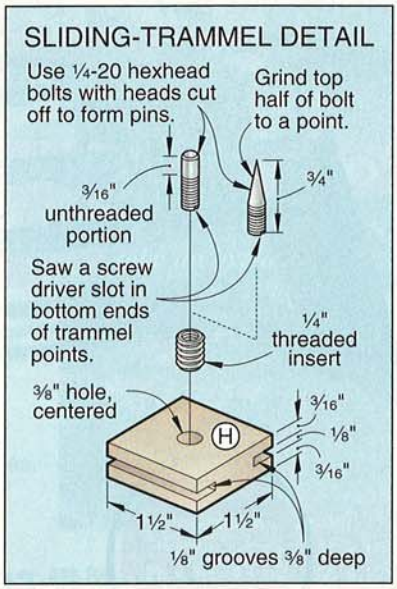
*Cut parts marked with an * oversize in length. Trim to finished size according to the instructions.

Materials Key: B–birch, H–hardboard.

Supplies: ⅛×¾" flat steel 36" long; ⅛×1" flat steel 3½" long; ¼" threaded insert; 2–¼-20x2" hexhead bolts (for trammel points); ¼-20×½" flathead machine screw (trimmed to 7/16" long).



CIRCLE-CUTTING GUIDE



Written by Marlen Kemmet Project Design: Chuck Hedlund Illustrations: Kim Downing Photographs: Hetherington Photography

Continued on page 38

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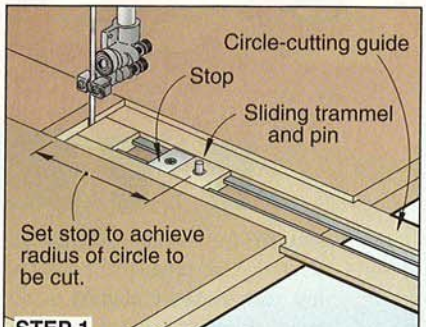
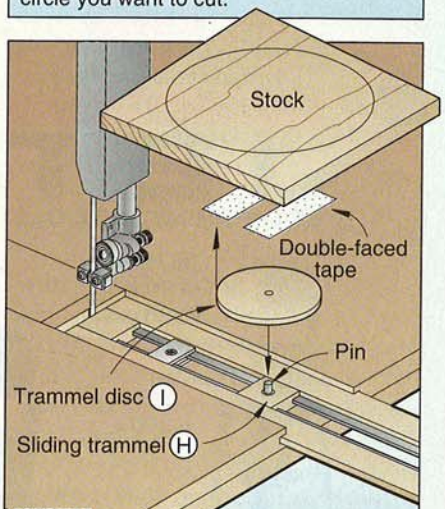
Circle-cutting Guide

Continued from page 36

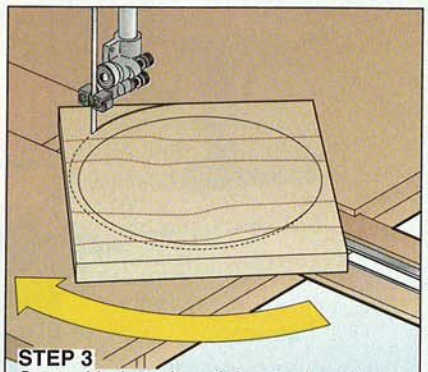
USING THE CIRCLE-CUTTING GUIDE



STEP 1
Remove the right-hand spacer guide, and replace it with the circle-cutting guide. Position and secure the sliding trammel so the distance from the center of the pin to the blade is equal to the radius of the circle you want to cut.



STEP 2
Using double-faced tape, adhere the trammel disc to the bottom center of the stock. Position onto the pin.



STEP 3
Start with the edge of the stock against the blade. Turn the saw on, and slowly rotate the stock into the blade. At the same time, slowly push the stock (mounted to the disc and sliding trammel) toward the blade until the sliding trammel comes in contact with the stop. Blade will begin to cut a perfect circle at this point.

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WOOD ANECDOTE

Black Gum

A Woodsplitter's Nightmare

Throughout the swamps of the South grows a good-sized tree that even the pioneers in their extensive use of wood left alone. While cedar, cypress, oak, and pine fell before the ax and were split for fence rails, shingles, clapboards and other essentials, the black gum (*Nyssa sylvatica*) was shunned. Not that black gum, or black tupelo as it is sometimes called, didn't yield good wood. The fact was, that once down, a black gum log was nearly impossible to split with tools at hand.

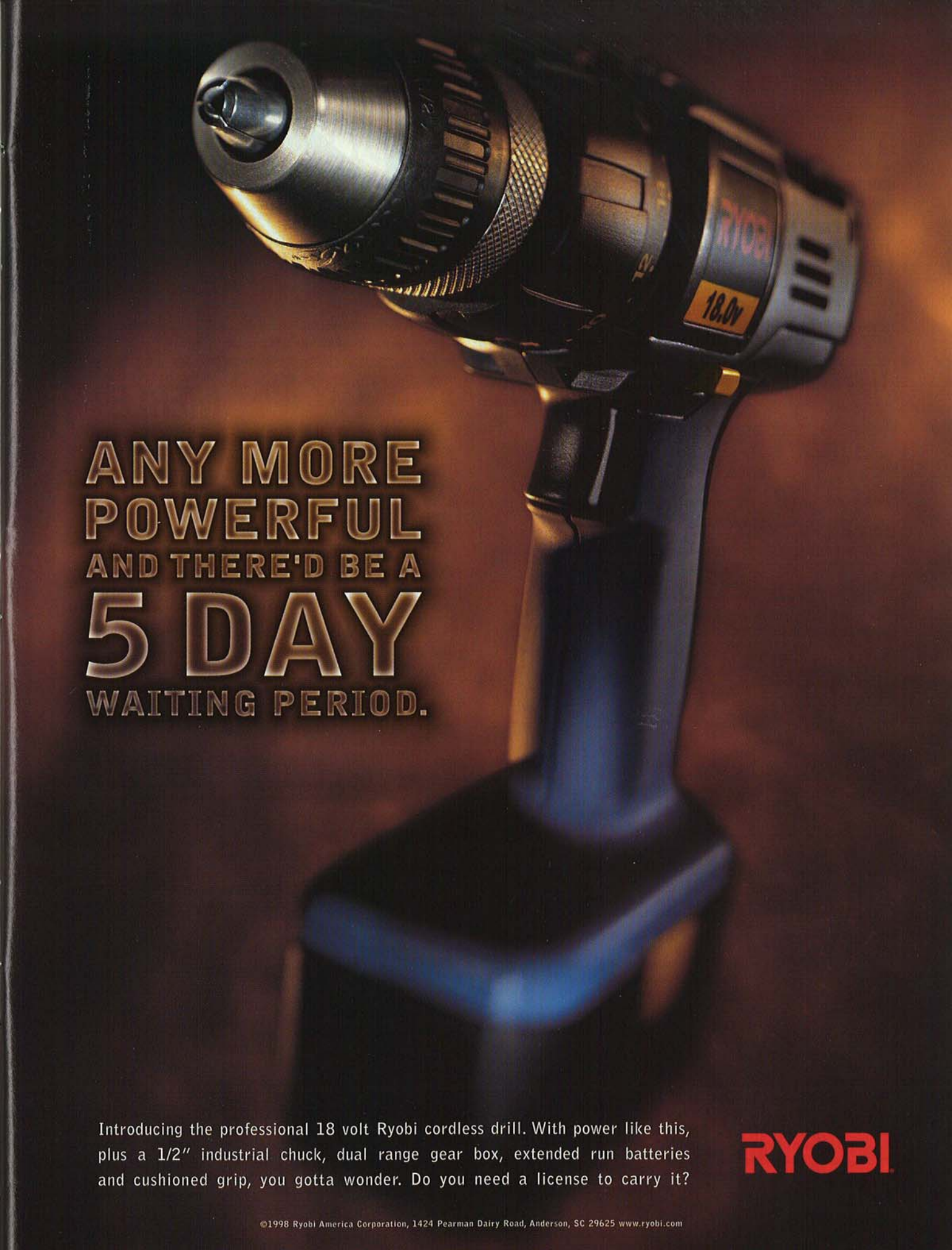
The wood of the black gum has fibers not only interwoven but twisted to boot. And while modern tools and cutting edges can surmount this obstacle, even the sharpest ax and the most expertly wielded froe of yesteryear made little headway splitting it. Yet, our enterprising forebears did find use for the wood. Dead, hollow trees were dropped, then sawn into short sections. Fitted with flat wooden tops, they became hives for honey bees or holding pens for chickens and ducks.

And it wasn't hard to spot a dying black gum. Because the tree dies from the top down, demised branches and trunk easily break off, in effect shortening the tree year by year.

Eventually, the unyielding wood of black gum filled the bill for heavy-duty tool handles, factory flooring, hard-working parts for farm machinery, conveyor rollers, and the core of hardwood plywood. In veneer form, the wood's unsplitable character made it the ideal material for berry baskets, for which it is still widely used.

Black gum's twisted, interlocked grain makes it nearly impossible to split, but in veneeer form, perfect for berry baskets.

Illustration: Jim Stevenson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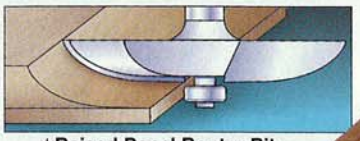

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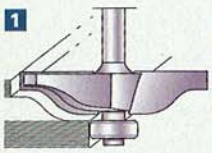

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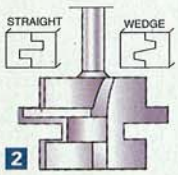

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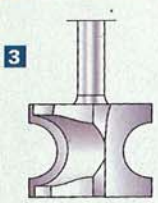

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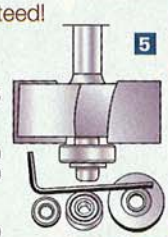

6 BRASS PILOTED
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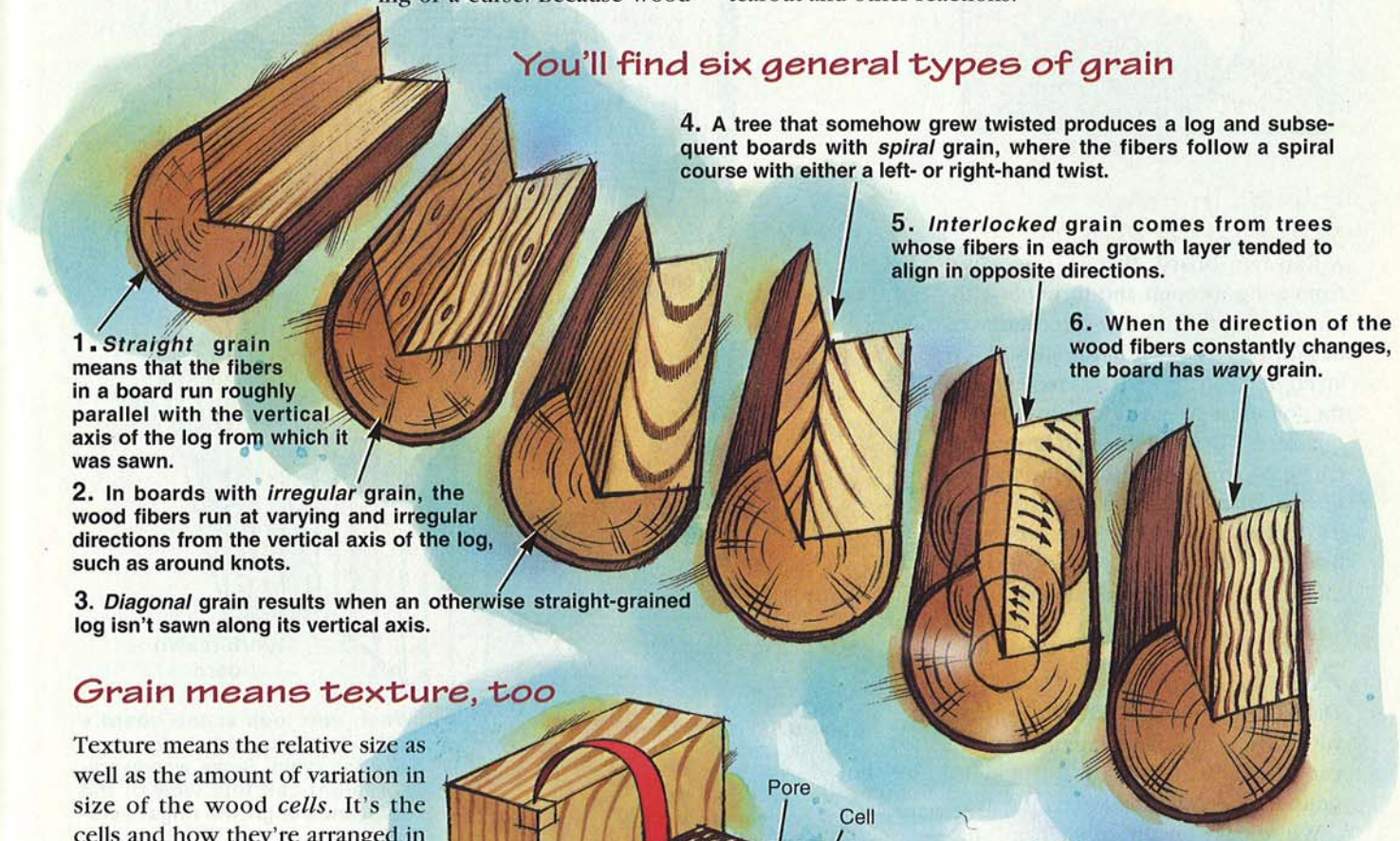
Understanding Wood Grain

A craftsman selects a certain type of wood for a project because of a number of reasons. Grain is one. Yet that word has many meanings.

Technically, the word *grain* refers to the orientation of wood-cell fibers. That's quite different from *figure,* which describes the distinctive pattern that frequently results from various grain orientations. To understand this, it may help to think of the word *direction* following the word grain. All grain types except straight grain can be a blessing or a curse. Because wood with anything other than straight grain may be sawn to produce sometimes exquisite figure, errant grain becomes a blessing. In structural applications, such as home construction, lumber (mostly softwood) with other than straight grain loses some strength. And hardwood boards without straight grain require extra care in machining to avoid tearout and other reactions.

You'll find six general types of grain



1. ***Straight*** **grain means that the fibers in a board run roughly parallel with the vertical axis of the log from which it was sawn.**

2. In boards with *irregular* grain, the wood fibers run at varying and irregular directions from the vertical axis of the log, such as around knots.

3. *Diagonal* grain results when an otherwise straight-grained log isn't sawn along its vertical axis.

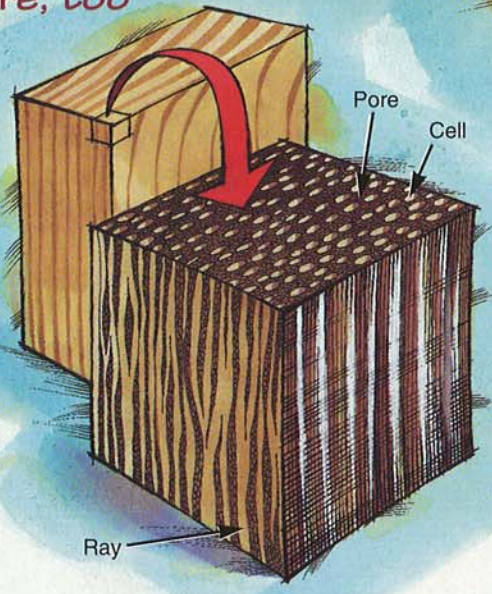
4. A tree that somehow grew twisted produces a log and subsequent boards with *spiral* grain, where the fibers follow a spiral course with either a left- or right-hand twist.

5. *Interlocked* grain comes from trees whose fibers in each growth layer tended to align in opposite directions.

6. When the direction of the wood fibers constantly changes, the board has *wavy* grain.

Grain means texture, too

Texture means the relative size as well as the amount of variation in size of the wood *cells*. It's the cells and how they're arranged in bands called *rays*, and the size and distribution of *pores*, that make the difference between fine-textured wood and coarse-textured wood. Woodworkers, though, say "fine-grained" and "coarse-grained" rather than use the word texture to describe this characteristic of wood. And you don't have to be a wood technologist to see as well as feel the difference in grain.



Woods with wide large cells, many pores, and broad rays tend to be coarse-grained. Oak and ash, for instance, rate as coarse-grained.

Wood that has smaller cells, fewer pores, and thin rays, such as sycamore and maple, falls into the fine-grained category.

Medium-grained woods include walnut and mahogany. Because most wood from needle-leaf trees (softwood) has relatively small cells, it's considered fine-grained. Grain descriptions also can be broken down to more closely describe a wood's feel, with words such as "extremely" or "moderately."

Continued on page 44

To fill or not to fill

When wood finishers refer to a hardwood as *open-grained* or *close-grained*, they're talking about the relative size of the pores. This determines whether or not the surface requires application of a filler to get a smoother finish.

It's all in how you view a board

A flatsawn board, that is, one sawn from a log through and through without it being turned, has three surfaces or *planes,* as shown in the illustration at *right.* In true quartersawn wood, the log must be sawn lengthwise into quarters. Then, each quarter log has to be sawn perpendicular to the growth rings. Although a quartersawn board has the same planes, its end-, face-, and edge-grain views will look different from a flatsawn board.

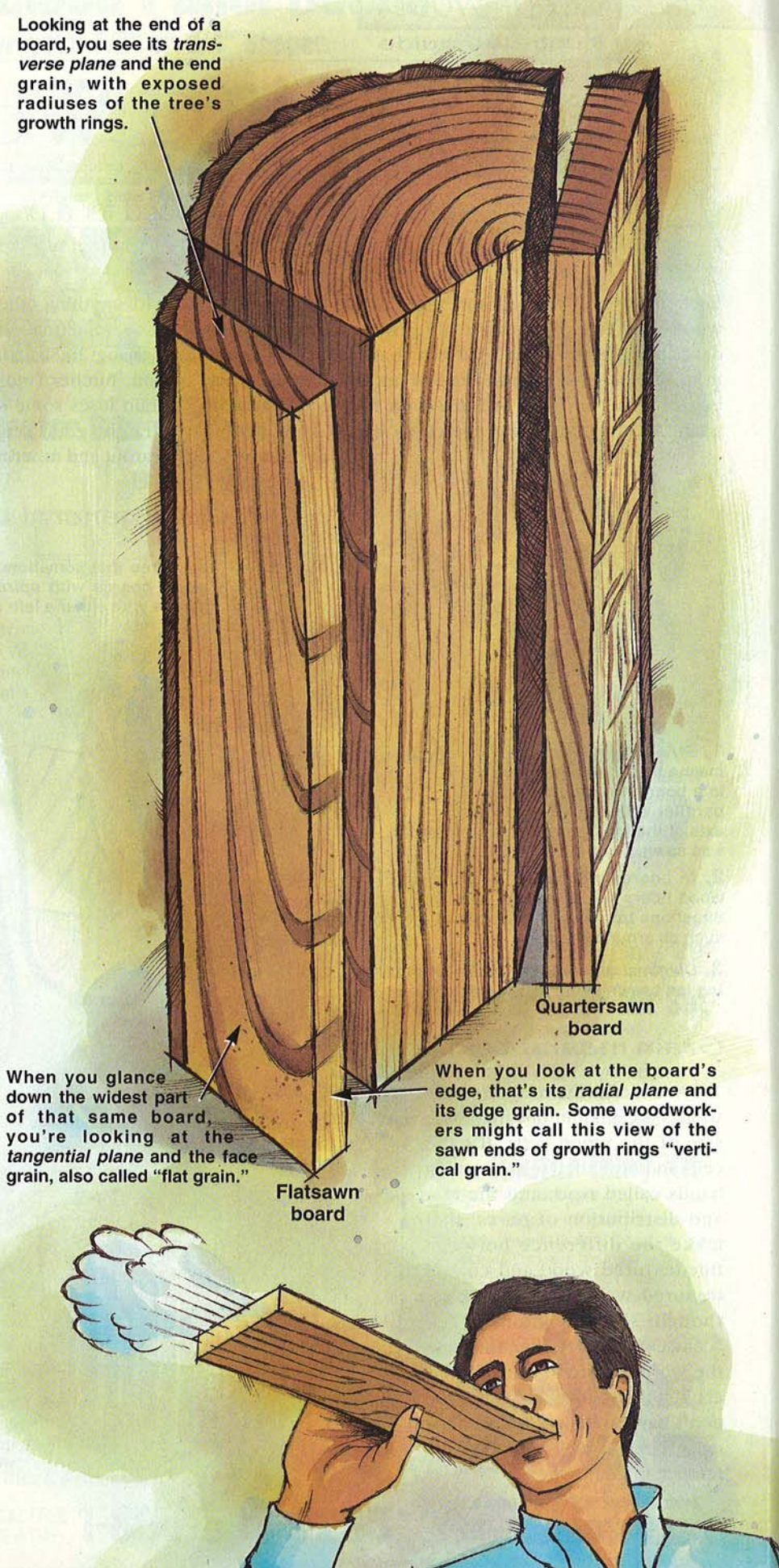
A few grainy tales

Did you know that the cellular structure of red oak is so open that you can blow smoke through it from end-grain to end-grain (flatsawn). Try it.

White oak, on the other hand, has such a tight cell structure that water can't pass. That's why white oak works so well for whiskey barrels and outdoor furniture.

Lignum vitae, a hardwood native to the West Indies, has the finest-grain of any wood known and an ironlike density. A cubic foot of it, air-dried, weighs about 83 pounds—so heavy that it won't float.

Illustrations: Brian Jensen


Looking at the end of a board, you see its *transverse plane* and the end grain, with exposed radiuses of the tree's growth rings.
Quartersawn board
When you look at the board's edge, that's its *radial plane* and its edge grain. Some woodworkers might call this view of the sawn ends of growth rings "vertical grain."
When you glance down the widest part of that same board, you're looking at the *tangential plane* and the face grain, also called "flat grain."
Flatsawn board

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Logging on a Small Scale

In New York's Adirondack Mountains, former logger Ed Carpenter re-creates in miniature the working vehicles he knows so well.

Summer brings more than tourists to the forests of New York's Adirondack Mountains. Warm weather spawns pesky blackflies, squadrons of mosquitoes, gnats, and nasty no-see-ums that draw blood at a bite. These pests, though, are just part of the working day to the loggers who make their living in the woods. "You know, there's a trick to dealing with those little critters," says the plaid-shirted man with the red suspenders as he casually observes the aerial attack. "Stuff a sheet of Bounce in your cap. They won't bother you. No kiddin'."

To hear a brawny guy in jeans and work boots at a logging site suggesting fabric softener as a repellent seems a bit out of character. But his tip works.

Above: **Rarely will you see a Prentice loader on a major highway. And to watch one pick up logs, you'll have to venture to a logging site. But Ed's miniature, tabletop model has a working boom and jaws. A circular saw to trim logs, called a slasher, trails behind.**

Right: **Ed Carpenter spent nearly a decade working in the woods. Now he applies his knowledge and skills to building scale logging collectibles of the machines he once worked with.**

Ed Carpenter, 49, no doubt knows many ways to deal with nature. After all, he practically grew up in the woods. The Warrensburg, New York, logger-turned-craftsman came from a logging family. Both of his grandfathers felled logs with bucksaws and

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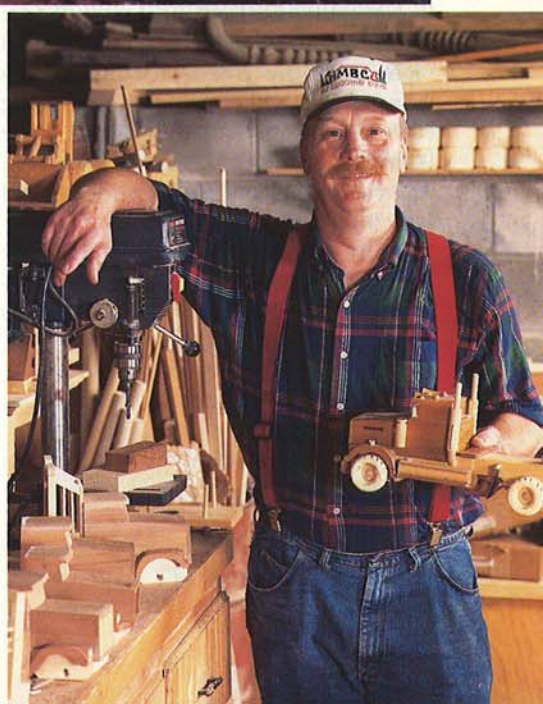
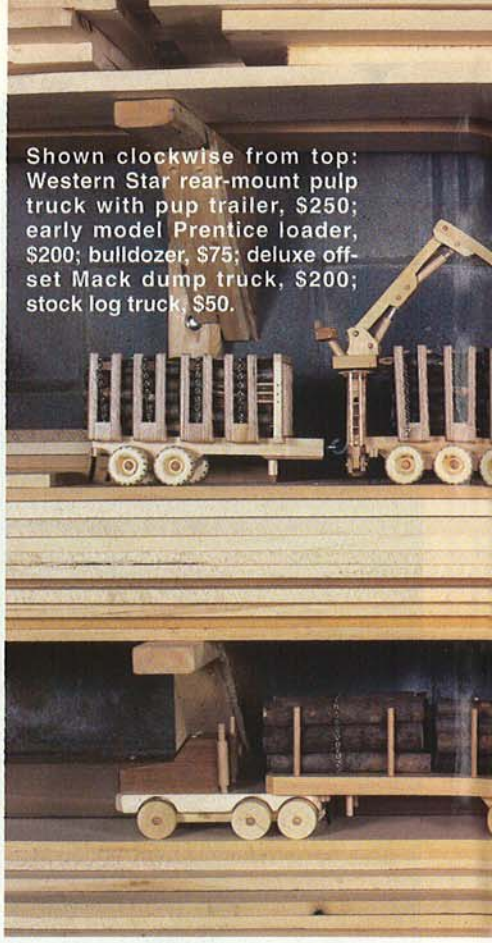


Made of yellow poplar and red cedar, this scale log skidder mimics the hauling work done by its full-size companion in the background.



Shown clockwise from top: Western Star rear-mount pulp truck with pup trailer, $250; early model Prentice loader, $200; bulldozer, $75; deluxe offset Mack dump truck, $200; stock log truck, $50.

hauled them with horses to the nearby Hudson River for rafting to the lumber mill or paper mill.

"My dad went into the construction business. But in the winter, when work was slow, he and his men turned to logging to pay the bills," says Ed, now turned storyteller. "He had one of the first chainsaws in town. And he used a bulldozer and arch—kind of an upside-down U with wheels—for skidding logs."

Naturally, Ed took up logging, too. He started out as a cutter—the man who fells the trees—for one of his four older brothers. Sometimes, using two skidders to drag logs, the Carpenters worked six days a week, all year long, cutting, skidding, and trucking the wood.

"The winters were best for the equipment because the cold temperatures allowed it to run cooler," notes Ed, tilting his cap over his red hair. "And the logs skidded easier on the snow and ice. Spring brought mud, but if you were smart, you saved a high and dry stand for then."

For a decade, Ed worked in the woods with his kin. Then a pair of serious accidents forced him to leave logging forever.

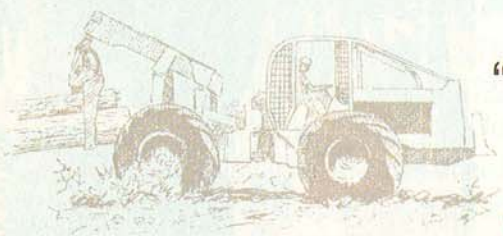
Scaling down the experience

Although too banged up to continue logging, Ed was able to go back to work with wood—as a carpenter. "Summers were good for construction, but unlike with logging, winters were slow," he recalls, taking a seat on a stump. "So I spent my new spare time in the shop."

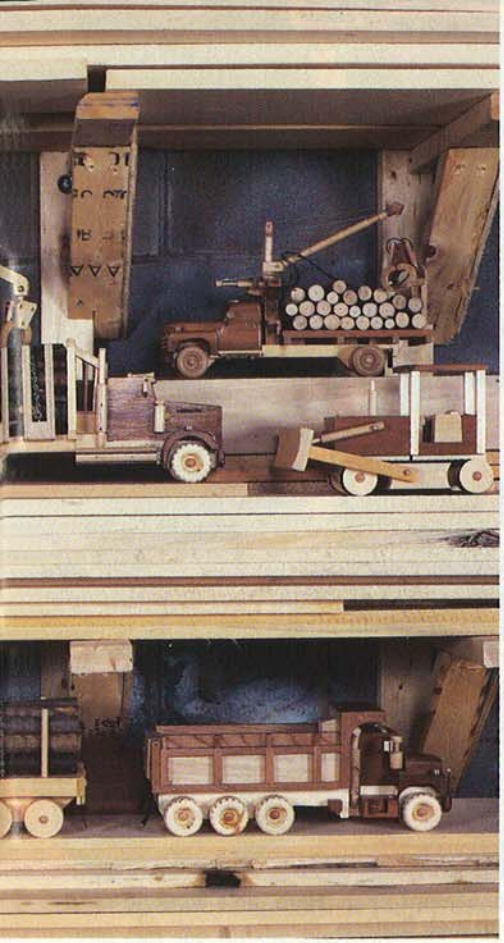
After a few years crafting coffee tables, bookcases, and other furniture to sell to friends and neighbors, the self-taught woodworker happened on a way to partially regain the logging experience. But without the dangerous work associated with it.

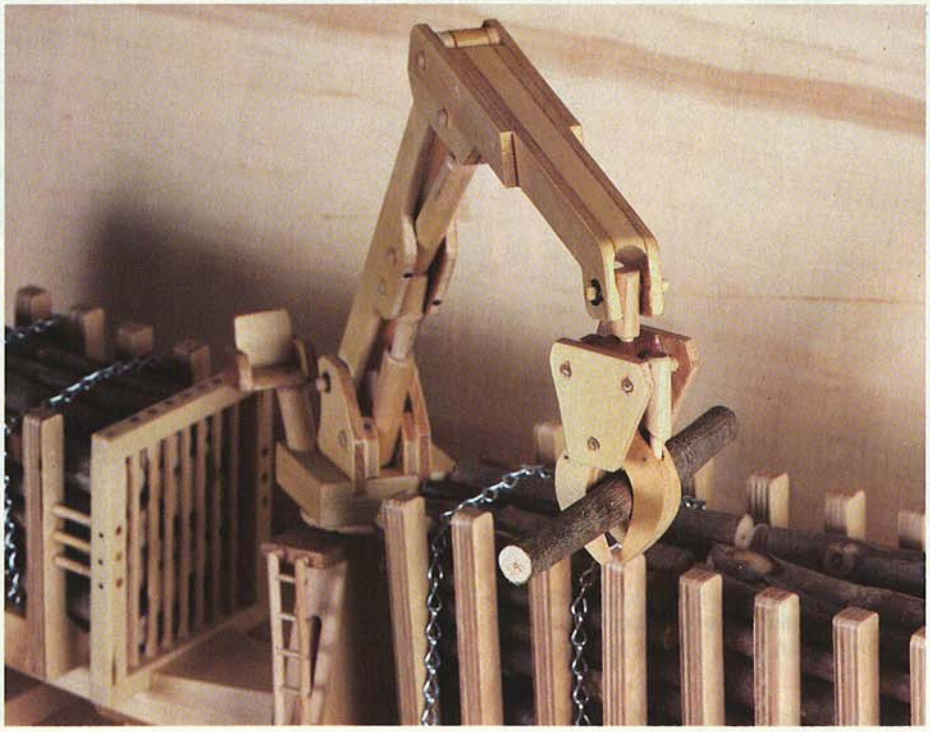
About eight years ago, a blocky wooden truck that he'd made for his son, Ed Jr., badly needed repair. "I took one good look at it and figured it was easier to make him a new one," Ed says. "And what I made was a stake-sided log truck, the kind I used to drive to the mill. But maybe because it was more detailed than the first one, my boy didn't like it. Not having anyone else to give it to, my wife, Sheila, suggested placing it in the local craft shop. No sooner did we get home from there than the phone rang. It was the guy at the shop. 'I just sold your truck. Can you make a few more?' he asked. That's how Carpenter Creations, and my 1/18-scale trucks and logging equipment, got started." That's also why Ed now frequently revisits the woods—to see the machines in action and get their dimensions (see "Want to build in scale?" on *page 51*). He relies heavily on photographs and manufacturers' equipment brochures, too.

Even the "logs" he places on the trucks seem to be in scale. "They're sticks of striped maple—really a



"They'll do just about everything except leak oil!"





The scale Prentice loader holds a tiny pulpwood log above a bunk trailer.

shrub—that I cut in winter and air-dry by the furnace so the bark stays on," he notes.

Caricatures in wood

One truck, one sale. A second truck, another sale. Ed was encouraged. "I began designing more of the machines that I'd worked with in the woods," he says. "After the log truck came a skidder, used to pull logs. It's basically a simple machine, but it was my first experience with making hydraulic parts—the movable blade—out of wood. It took a few attempts to keep the cylinders from falling apart at full extension."

Ed recalls how the demand for his vehicles began. "My friends who still worked at logging heard that I was making model trucks and other equipment. They'd stop by the shop and ask if I could build a special model of skidder, or a certain type of truck. Well, I had a lot of these friends, and I wasn't charging much, so I was getting pretty worked over," he chuckles. "Finally, I had to raise the prices for the time I was putting in. Now, I don't have near as many friends!" he concludes with a wink.

What Ed did learn from his friends—besides a lesson in sales—was that anyone who works with equipment wants the model to look like the real thing. "Now, I don't make perfect replicas, but all of the characteristics of a model or a brand are there. They're not exact; they're more like caricatures in wood. But I've had loggers come up to my booth and say, 'You designed that to be a John Deere, didn't you?' "

Toys for big boys, too

In the years since Ed first started crafting wooden vehicles of the logging industry, he's managed to develop quite a few offerings—all with working wooden hydraulics where applicable. First, there's his reliable "stock" series.

"Those are vehicles designed for kids to play with," the craftsman points out. "They're durable—a grown man could stand on the bulldozer and not break it." Along with the dozer in the stock series, Ed builds a pulp truck with a Prentice (log) loader and tag-along "pup" trailer, a plain pulp truck and trailer, bucket loader, skidder, dump truck, tractor-trailer, log truck, and a utility trailer. The truck cabs are meant to be generic and simple, and their price reflects the plain lines—from $45 to about $180.

Ed's "custom cab" series, although built as ruggedly as the playthings, look more like models with their treaded tires and extra detailing. A Mack truck looks like a Mack (or a Western Star, Freightliner, or GMC General). Ed adds air horns, adjustable mirrors, fender flaps, toolboxes that open, and spring-tensioned chains to secure the logs, and even includes—at slight extra charge—company logo decals for the doors (he has them custom made at a local sign shop that does silk screening). These special vehicles start at $200. And to his customers who really know trucks and logging equipment, they're worth the extra money.

"People like my pieces because they not only look like the real thing, they work like it," Ed says. "They'll do just about everything but leak oil!"

Tires for heavy hauling

In his large basement shop there's lumber stored everywhere. Boards have their places on wall racks, sorted by species. The striped maple des-

Continued

At his bandsaw, Ed cuts out part of a Prentice loader's working boom made of yellow poplar.

Ed often spends 50 hours a week in his basement shop. Here, he's working on a loader's boom. The semis await completion of their trailers.

tined for scale logs lies in bundles near the wood stove as it air-dries.

Ed buys 4×4" red cedar posts and resaws them to get the stock for his truck cabs, although he sometimes uses local cherry. For contrast in his vehicles, he makes truck trailers, chassis, wheels, and other parts from yellow poplar, with plywood for the stanchions on pulp trailers that separate the logs for the cutter at the paper mill. "For the cherry and poplar, I go right to the sawmill—it belongs to my brother-in-law," he confesses, then adds with a grin, "It costs less that way."

The big-treaded tires on Ed's custom series trucks and the logging equipment really spur sales at the shows he attends. And over the years, he's made thousands of them.

"I've got it pretty much down to a science because those are about the only parts I stockpile in any kind of quantity," he says. "In a long winter evening, I'll make dozens of them."

His rugged, 1¼"-thick tires are made from two ⅝"-thick halves glued together. Ed draws each half of the tires out on yellow poplar stock, then saws them out on the bandsaw. At the router table, he gives them shape with a round-over bit. For the routing, he designed a jig to keep his fingers away from the bit.

"I was always pretty nervous getting my fingers so close. This jig, though, works like a clamp," Ed explains. "It's a larger-diameter tire with four evenly spaced nails in it that barely bite into the tire being routed [see photo *opposite page*]. When I spin the jig, it turns the tire that I'm rounding over against the bit. Sure, it makes some nail holes in the tire, but they vanish with the saw kerfs during the next step, when I cut the tread at the tablesaw [as shown *opposite page*]."

After Ed kerfs each tire half for the treads, he joins them with Weldbond, the adhesive he uses for all of his vehicle work. "It sets up quickly so I don't usually have to clamp," he says.

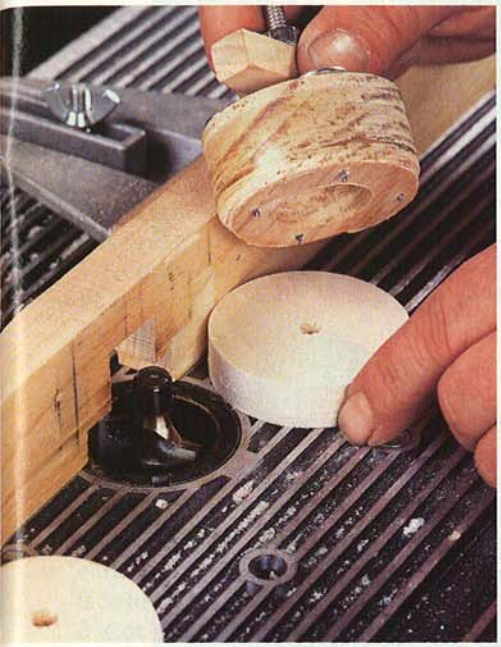
For a finish, Ed likes Zar water-based semigloss urethane. "With it, there's little odor, especially during the winter when it's hard to ventilate my shop," he says. "Usually, the cedar parts get three or four coats and the poplar and plywood two."

"They're not exact; they're more like caricatures in wood."

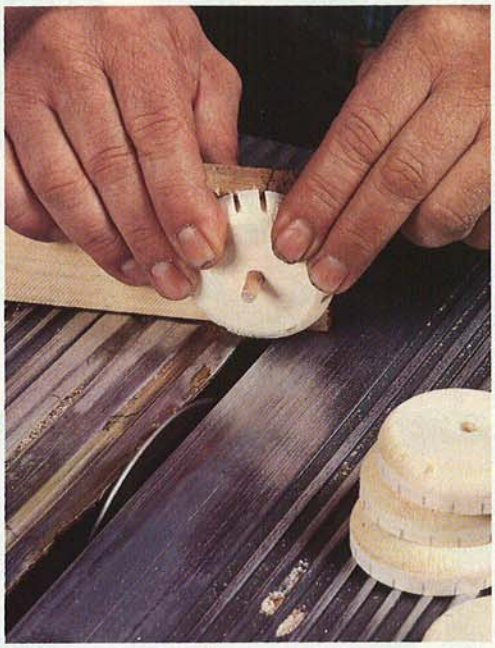
Vehicles for crafts shows—and court rooms

Besides selling his work at crafts shows and fairs in the Adirondack mountain-and-lake vacation region, Ed and Sheila attend an annual string of lumberjack festivals and logging field days. "We go through upstate New York, and over to Vermont and Maine," says the craftsman.

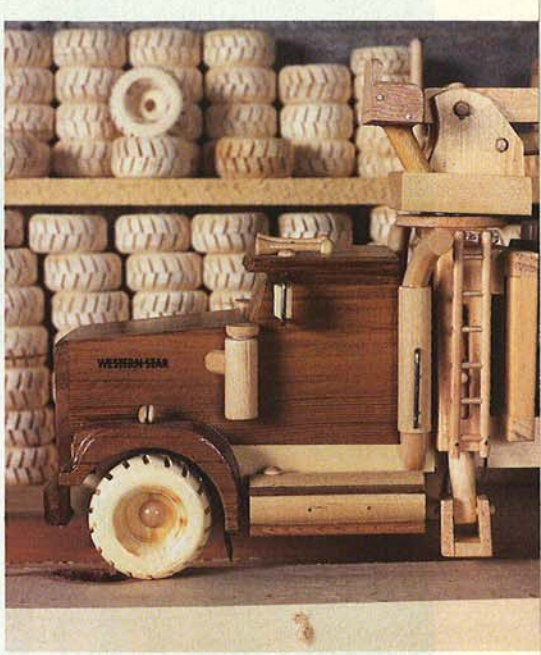
"At traditional crafts shows, the people appreciate the work, but they don't really understand what they're seeing. That's because most logging



Ed devised this jig to keep his fingers away from the bit while rounding over tires at the router table.



With the miter gauge set at 15°, a jig holds the tires while Ed saws evenly spaced kerfs for tread.



A truck driver wouldn't need the decal to recognize this semi as a Western Star. Behind is Ed's tire inventory.

equipment never leaves the woods," Ed explains. "Logging and pulp trucks you can see on the highway, but you hardly ever see a skidder or a Prentice loader. But lumberjack festivals and field days all have logging equipment on display, and the people who attend actually know what the things I make really do."

Ed gets a few very special orders, too. A few years back, a vacationing Texan inquired if he would build a cotton hauling truck—the kind his company made. Ed replied with his usual dry wit: "I told him that cotton growin' has been dead here in the Adirondacks for quite awhile, so we don't see trucks like that and I'd need a reference." A few weeks later he received a video showing how the massive dump-truck vehicle used eight drive chains to load gigantic bales. It was enough for Ed to go on.

And just last year, one of the Adirondack woodworker's vehicles became an "expert witness" for a civil action lawsuit. According to Ed, a worker on a logging crew in Mississippi was injured during the log-stacking operation of a Prentice loader. The worker filed suit against the loader's manufacturer, a Wisconsin-based company. For the trial, the manufacturer's defense lawyer wanted to demonstrate the loader in action, but not in the woods. So, with a rush order, he requested a model loader and truck from Ed, whom the company had known about from his requests for product literature. "I never heard how the trial turned out," says Ed. "But I do know my loader performed before the jury—and I'm sure it didn't any leak oil!"

Want to build in scale? Here's how

To build something to scale means nothing more than making your model to a size that's directly proportional to the original. Ed Carpenter builds his models to 1/18 scale, meaning that his models are 18 times as large as the real thing. Or, every inch of one of his models equals 18" of the original's measurements. Let's use Ed's 1/18 scale to find a dimension (and this works for whatever scale you want to work in).

If you wanted to make a model of a huge earthmover's tire, for instance, you would multiply the measurement of its diameter (let's try 6') by the number of inches in a foot (12) to arrive at a sum (72"). Now, divide the sum by the scale you're using (18) to arrive at the diameter of your model tire (4"). For guidelines, below you'll find some popular scales employed by model builders in their work.

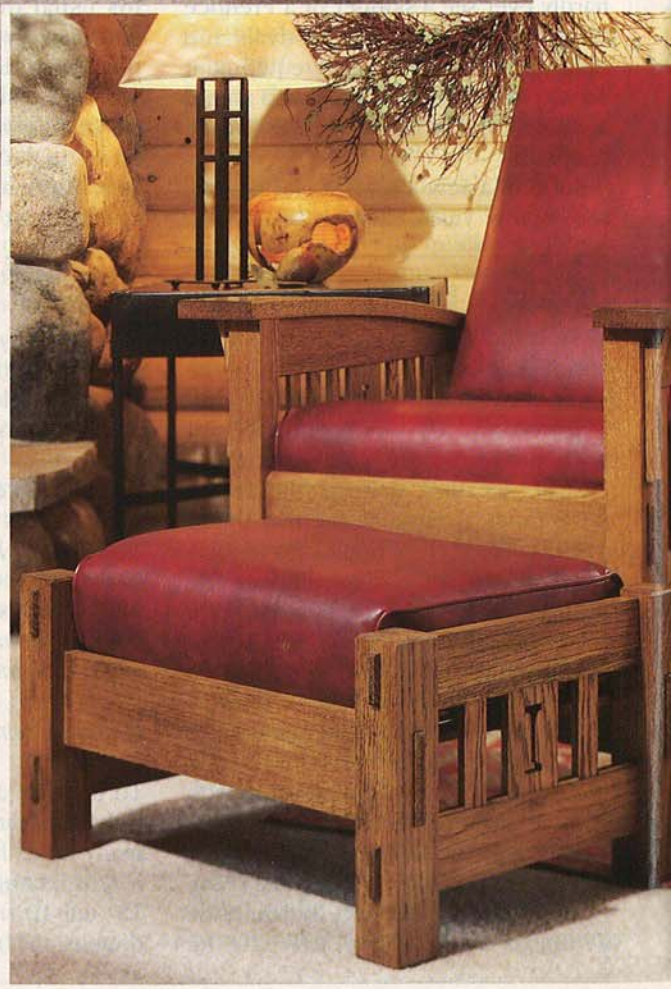
Airplanes and helicopters	1/72 or 1:72 1/48 or 1:48
Doll-house furniture	1/12 or 1:12
Vehicles	1/24 or 1:24
Military armor and soldiers	1/35 or 1:35
HO-gauge trains	1/87 or 1:87
Lionel trains	1/27 or 1:27
N-gauge trains	1/160 or 1:160

To up-scale any project, simply multiply its actual measurement by how many times larger you want to build it. For example, to make something 12" tall 10 times larger, multiply its dimensions by 10 (12"×10=120").

Learn more about the vehicles of Carpenter Creations

For a brochure of Ed's logging line, send a business-size SASE to Carpenter Creations, 143 Library Ave., Warrensburg, NY 12885. Add $4 (US) for wheel-shaping jig plans and a list of others available.

Written by Peter J. Stephano Photographs: John Kane/Silver Sun Studio Illustrations: Brian Jensen



ARTS-AND-CRAFTS CLASSICS

Coffee Table and Ottoman

Create a roomful of furniture with this beautiful series of Mission pieces.

In the previous issue, we introduced this impressive Arts-and-Crafts collection with the Morris-style chair. Here, we follow suit with this handsome coffee table and ottoman. Stay tuned for the August issue in which we show how to build the bookcase.

Begin by laminating and machining the legs

Note: *For an authentic look, choose straight grain or rift-cut stock, preferably white oak, for all the pieces of this project.*

1 To form the 2¼"-square legs (A), cut 12 pieces of ¾" stock to 2⅜ by 19". (Using these dimensions, the pieces are oversized ⅛" in width and 1" in length so you can trim flush the edges and ends of the legs later.) See the Leg drawing *at right* for reference.

2 Spread an even coat of glue on the mating surfaces of three pieces making up each leg. With the edges and ends flush, glue and clamp the pieces face-to-face to form the four legs.

3 Cut or plane an equal amount off both edges of each leg for a 2¼" finished width. Then, trim both ends of each leg for an 18" finished length.

4 Lay out the mortises on the *outside* surface of each leg where dimensioned. (To ensure any possible chip-out would be on the *inside* surface and covered by the rail and stretcher tenon shoulders, we marked the mortisess on the outside surfaces. We also drilled from the outside surface so the bit came through on the inside.)

5 Attach a wood top and fence to your drill-press table. Using a 7/16" brad-point bit, drill holes inside the marked mortises. Square-up the mortises with a chisel. You could also form the mortises with a mortiser.

6 Rout a ⅛" chamfer along the top and bottom end of each leg.

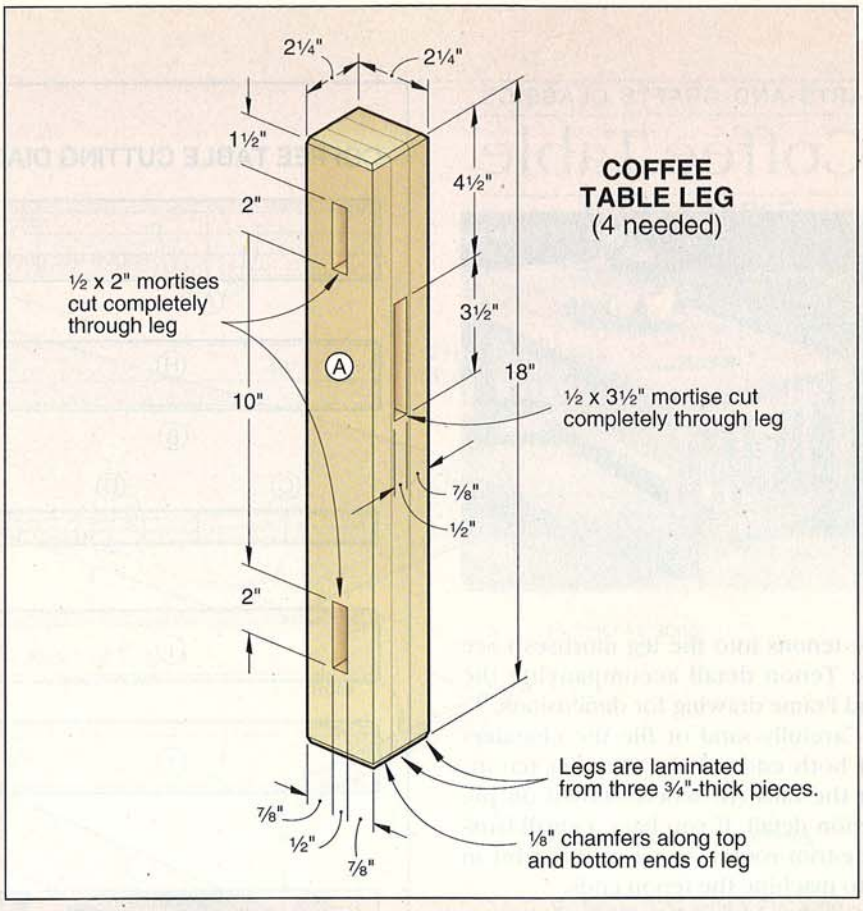
Machine and assemble the end frames

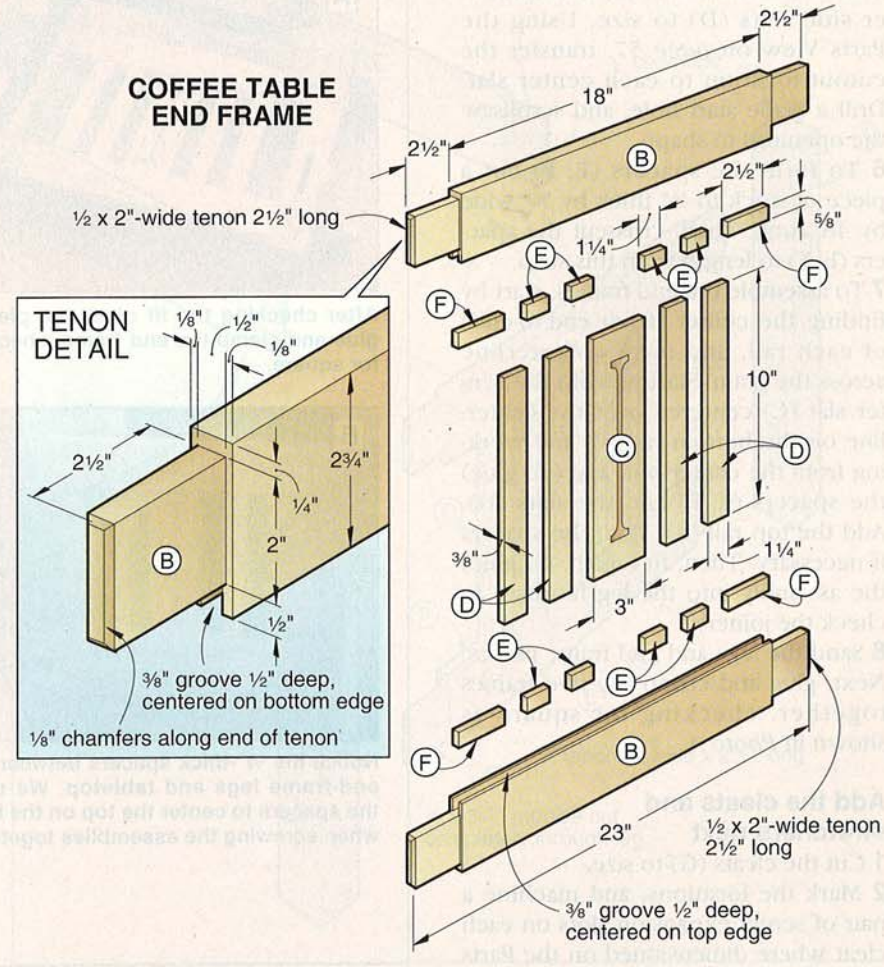
1 Cut the upper and lower rails (B) to the sizes listed in the Bill of Materials from ¾" stock.

2 Fit your tablesaw with a ⅜" dado blade, and cut a ⅜" groove ½" deep, centered along one edge of each rail. See the End Frame drawing and accompanying detail for reference.

3 Switch to a wider dado blade on your tablesaw. Then, attach a long wooden extension to your tablesaw's miter gauge, and square the extension to the blade. Using a stop for consistency, cut rabbets to form tenons on the ends of the rails (B). (We test-cut scrap stock first to ensure a tight fit of

Continued





ARTS-AND-CRAFTS CLASSICS

Coffee Table

the tenons into the leg mortises.) See the Tenon detail accompanying the End Frame drawing for dimensions.

4 Carefully sand or file the chamfers on both ends of the through tenons on the rails (B) where shown on the Tenon detail. If you have a small laminate-trim router, use a chamfer bit in it to machine the tenon ends.

5 Cut the center slats (C) and narrower side slats (D) to size. Using the Parts View on *page 57*, transfer the cutout location to each center slat. Drill a blade start hole, and scrollsaw the openings to shape.

6 To form the spacers (E, F) cut a piece of stock to ⅜" thick by ⅝" wide by 48" long. Then, crosscut the spacers (E, F) to length from this strip.

7 To assemble the end frames, start by finding the center (from end-to-end) of each rail, and mark a centerline across the grain. Starting with the center slat (C) centered over the centerline on the bottom rail (B) and working from the center out, add (no glue) the spacers (E, F) and the slats (D). Add the top rail (B). Trim the spacers if necessary. Then, fit (again, no glue) the assembly into the leg mortises to check the joinery.

8 Sand the legs and end frame pieces. Next, glue and clamp the two frames together, checking for square as shown in *Photo A*.

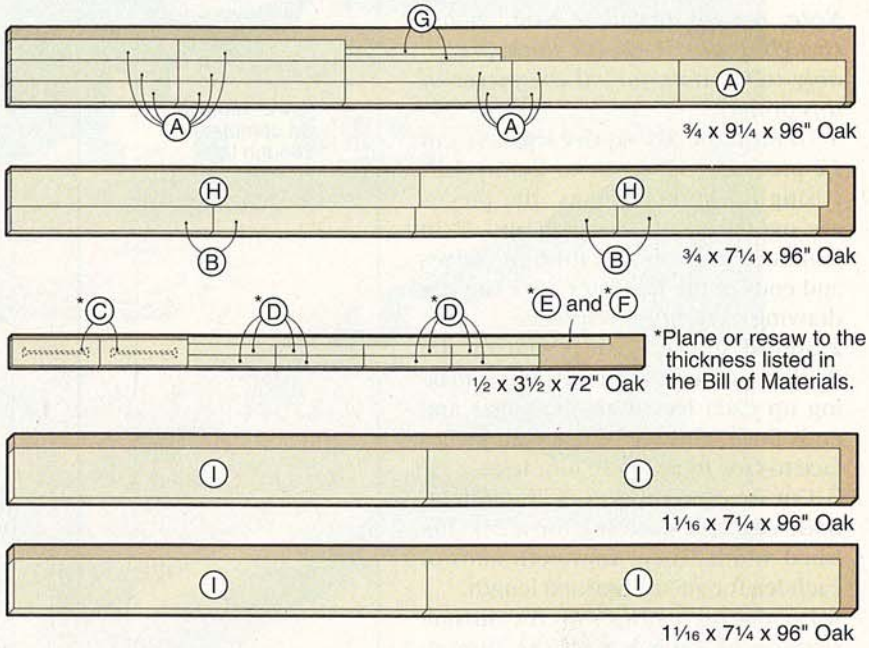
Add the cleats and stretchers next

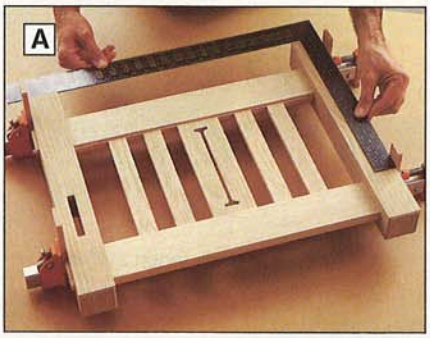
1 Cut the cleats (G) to size.

2 Mark the locations, and machine a pair of screw expansion slots on each cleat where dimensioned on the Parts

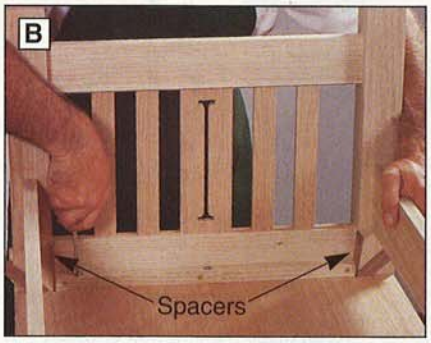
Continued

COFFEE TABLE CUTTING DIAGRAM





After checking the fit of all the pieces, glue and clamp the end frame, checking for square.



Notice the ⅛"-thick spacers between the end-frame legs and tabletop. We used the spacers to center the top on the base when screwing the assemblies together.

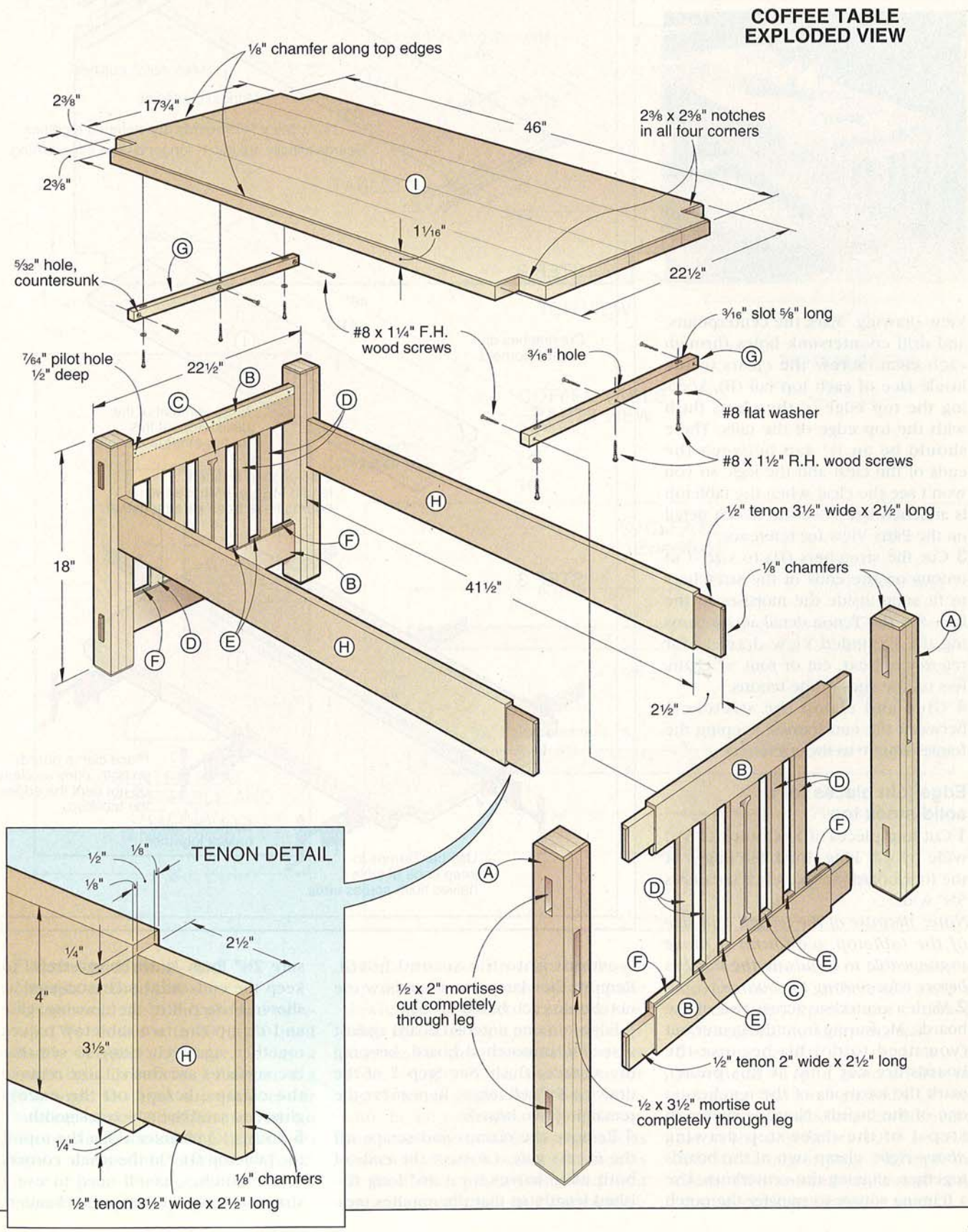
Coffee Table Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A* legs	2¼"	2¼"	18"	LO	4
B rails	¾"	2¾"	23"	O	4
C ctr. slats	⅜"	3"	10"	O	2
D side slats	⅜"	1¼"	10"	O	8
E* spacers	⅜"	⅝"	1¼"	O	16
F* spacers	⅜"	⅝"	2½"	O	8
G cleats	¾"	¾"	17¾"	O	2
H stretchers	¾"	4"	46½"	O	2
I* tabletop	1 1/16"	22½"	46"	EO	1

*Cut parts marked with an * oversize. Trim to finished size according to the how-to instructions.

Materials Key: LO–laminated oak; O–oak; EO–edge-joined oak.

Supplies: 6–#8x1¼" flathead wood screws, 6–#8x1½" roundhead wood screws with flat washers, stain, clear finish.


COFFEE TABLE
EXPLODED VIEW
⅛" chamfer along top edges
2⅜"
17¾"
46"
2⅜"
2⅜ x 2⅜" notches
in all four corners
I
1 1/16"
G
5/32" hole,
countersunk
22½"
#8 x 1¼" F.H.
wood screws
3/16" slot ⅝" long
3/16" hole
G
#8 flat washer
#8 x 1½" R.H. wood screws
7/64" pilot hole
½" deep
22½"
B
C
D
H
½" tenon 3½" wide x 2½" long
⅛" chamfers
18"
F
B
41½"
A
D
E
F
H
2½"
B
D
F
A
D
F
E
C
B
E
½" tenon 2" wide x 2½" long
½ x 2" mortises
cut completely
through leg
½ x 3½" mortise cut
completely through leg
TENON DETAIL
½"
⅛"
⅛"
2½"
¼"
4"
3½"
H
¼"
⅛" chamfers
½" tenon 3½" wide x 2½" long

ARTS-AND-CRAFTS CLASSICS

Coffee Table

View drawing. Mark the centerpoints, and drill countersunk holes through each cleat. Screw the cleats to the inside face of each top rail (B), keeping the top edge of the cleats flush with the top edge of the rails. There should be an ⅛" gap between the ends of the cleat and the legs, so you won't see the cleat when the tabletop is attached later. See the Notch detail on the Parts View for reference.

3 Cut the stretchers (H) to size. Cut tenons on the ends of the stretchers to fit snug inside the mortises in the legs. See the Tenon detail accompanying the Exploded View drawing for reference. Next, cut or rout ⅛" chamfers on the ends of the tenons.

4 Glue and clamp the stretchers between the end frames, keeping the frames square to the stretchers.

Edge-join pieces for a solid-stock top

1 Cut four pieces of 1 1/16" stock to 5¾" wide by 47" long. Joint the edges of the four boards so that each measures 5⅝" wide.

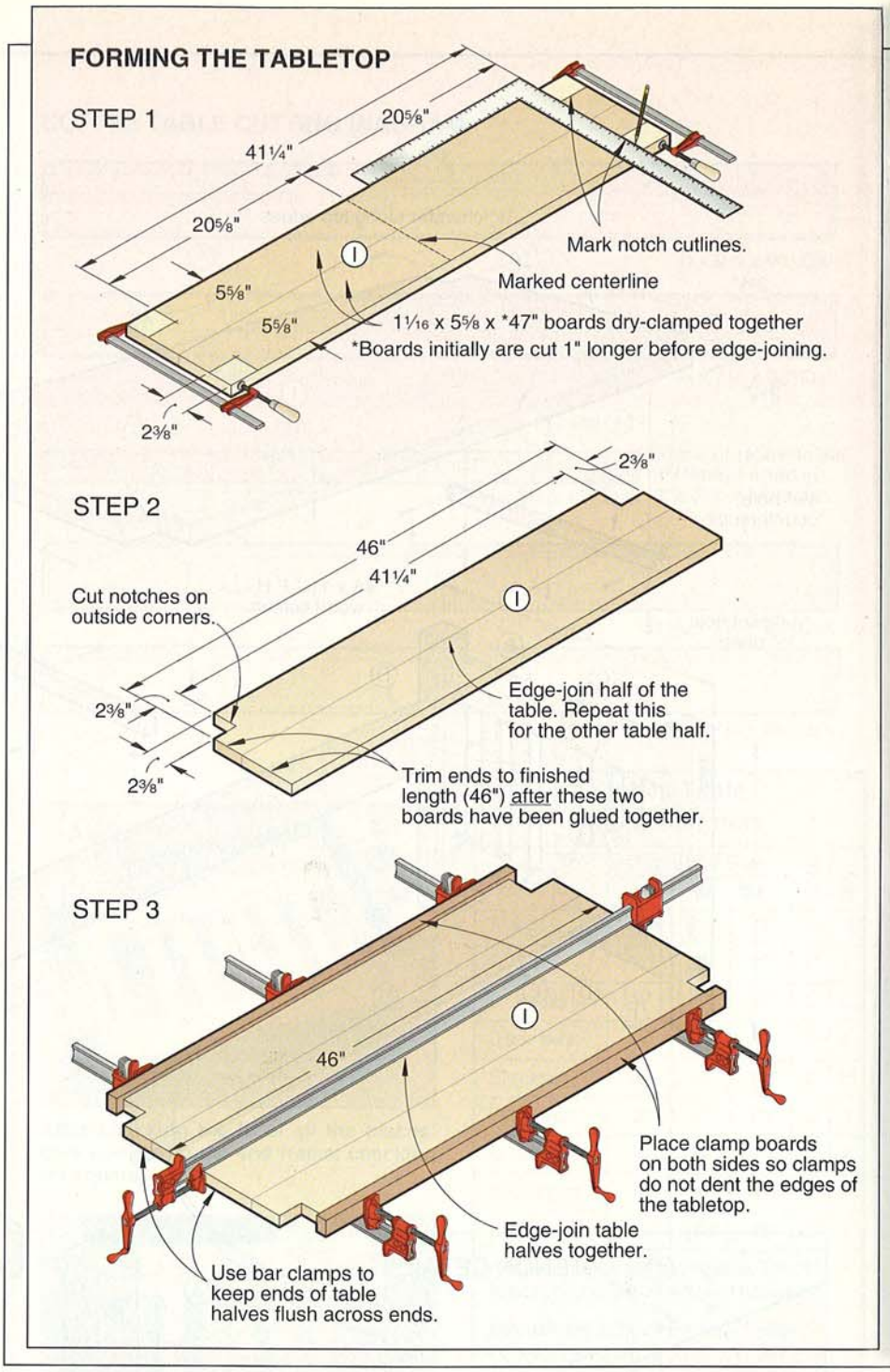
Note: *Because of the weight and size of the tabletop, we found it more manageable to bandsaw the notches before edge-joining the boards.*

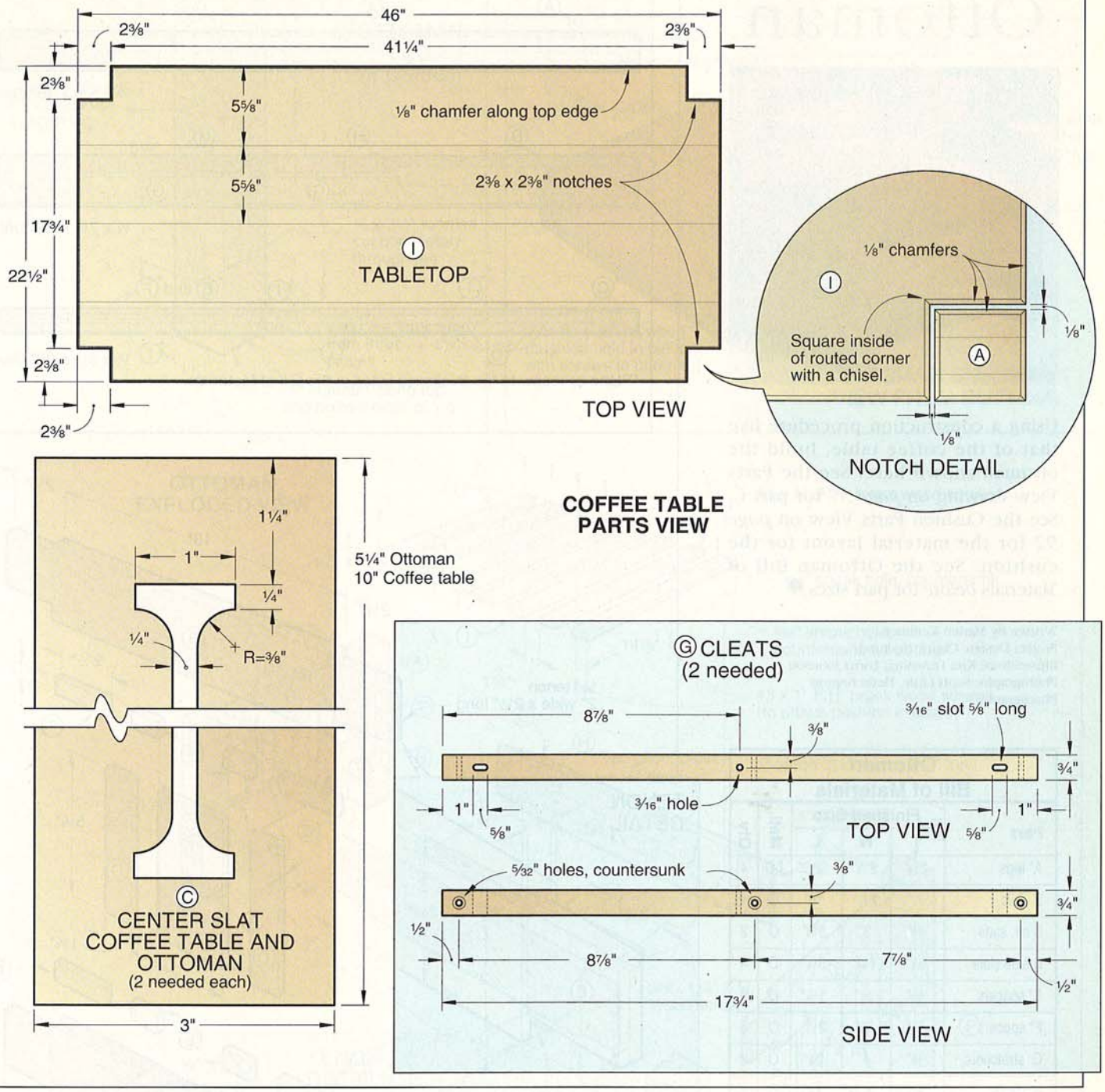
2 Mark a centerline across two of the boards. Measuring from the center out (you need to do this because the boards are cut long at this point), mark the locations of the notches on one of the boards. Now, as shown in Step 1 of the three-step drawing *above right*, clamp two of the boards together, aligning the centerlines. Use a framing square to transfer the notch locations onto the second board. Remove the clamps, and bandsaw the notches in each board to shape.

3 Edge-join one notched board against a second unnotched board, keeping the surfaces flush. See Step 2 of the drawing for reference. Repeat for the remaining two boards

4 Remove the clamps and scrape off the excess glue. Crosscut the ends of both table halves for a 46" long finished length, so that the notches measure 2⅜" long. Now, being careful to keep the ends and notches aligned as shown in Step 3 of the drawing, glue and clamp the two tabletop halves together, again checking to see that the surfaces are flush. Later remove the clamps, scrape off the excess glue, and sand the tabletop smooth.

5 Rout a ⅛" chamfer along the top of the tabletop (I). On the inside corners of the notches, you'll need to use a sharp chisel to square-up the chamfer.





Finish-sand, stain, and clear-coat the table

1 Finish-sand the table base and tabletop. (We sanded with 100-, 150-, and finally 220-grit sandpaper, using a bright light, in our case a halogen, at a low angle to check the surfaces for sanding marks. Another method we use to check for sanding marks is to lighlty damped the surface with lacquer or paint thinner, and then take a close look at it.)

2 Place a blanket on your workbench top, and place the tabletop (I) upside down on the blanket. Center the base (also upside down) on the tabletop, keeping the gaps around the notches even. Using the holes and slots in the leg cleats as guides, drill pilot holes into the bottom side of the tabletop, and screw the assemblies together as shown in *Photo B*. Center the screws in the slots, tighten them, and then back them off about half a revolution. You want the screws to be able to move back and forth in the slots as the tabletop expands and contracts with seasonal humidity changes.

3 Stain as desired. (We used Minwax Provincial #211, a good choice for imitating that time period.) Or, see our Arts-and-Crafts fumeless finish article in the November 1998 issue of WOOD starting on *page 74*. Apply the finish. (We brushed on several coats of satin polyurethane.)

ARTS-AND-CRAFTS CLASSICS

Ottoman

Using a construction procedure like that of the coffee table, build the ottoman shown here. See the Parts View drawing on *page 57* for part C. See the Cushion Parts View on *page 92* for the material layout for the cushion. See the Ottoman Bill of Materials *below* for part sizes.

Written by Marlen Kemmet
Project Design: Chuck Hedlund
Illustrations: Kim Downing; Lorna Johnson
Photographs: Scott Little, Hetherington Photography

Ottoman Bill of Materials

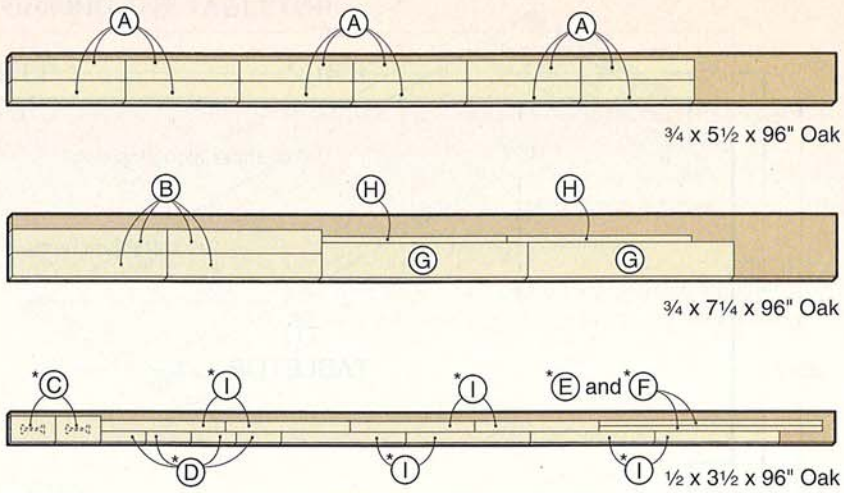
Part	Finished Size T	W	L	Matl.	Qty.
A* legs	2¼"	2¼"	12¼"	LO	4
B rails	¾"	2¾"	18"	O	4
C ctr. slats	⅜"	3"	5¼"	O	2
D side slats	⅜"	1¼"	5¼"	O	4
E* spacers	⅜"	⅝"	1¼"	O	8
F* spacers	⅜"	⅝"	2½"	O	8
G stretchers	¾"	4"	24"	O	2
H cleats	¾"	¾"	19"	O	2
I slats	⅜"	1¼"	14½"	O	8

*Cut parts marked with an * oversize. Trim to finished size according to the how-to instructions.

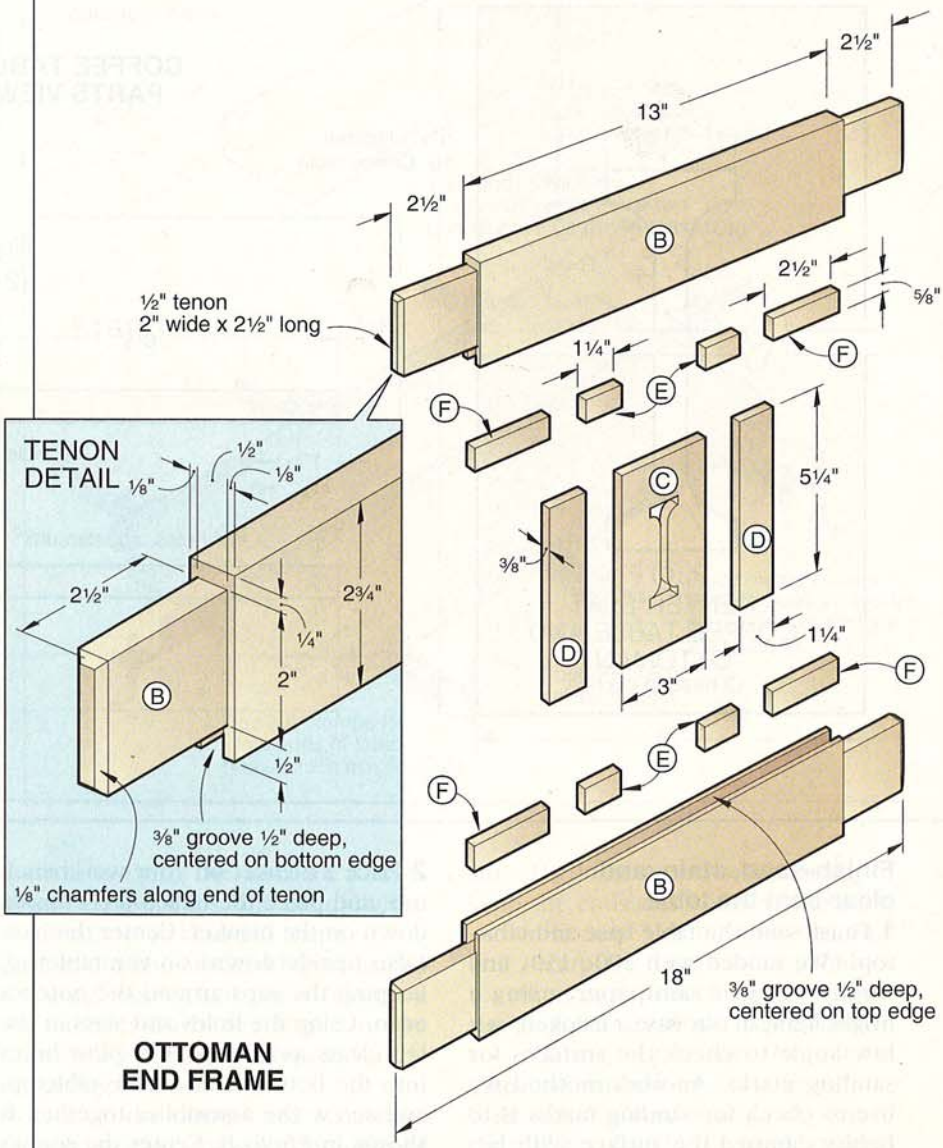
Materials Key: LO–laminated oak; O–oak.

Supplies: 20–#8×1" flathead brass wood screws, 6–#8×1¼" flathead wood screws, stain, finish.

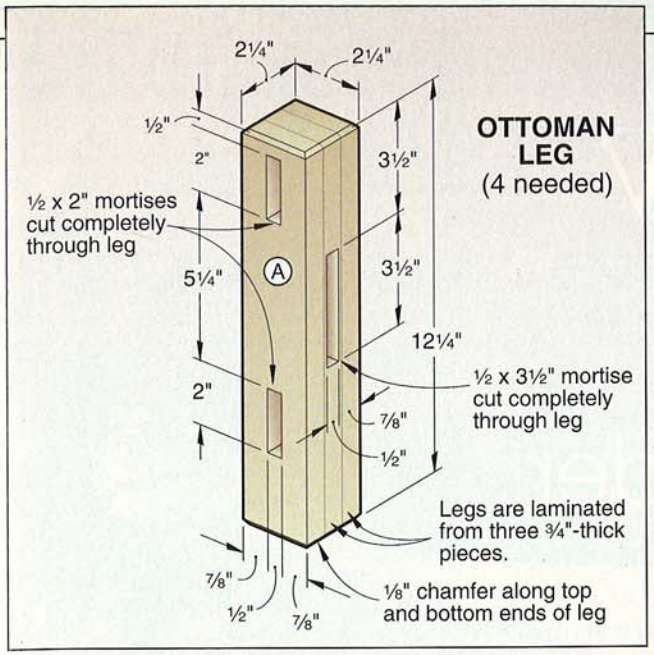
OTTOMAN CUTTING DIAGRAM

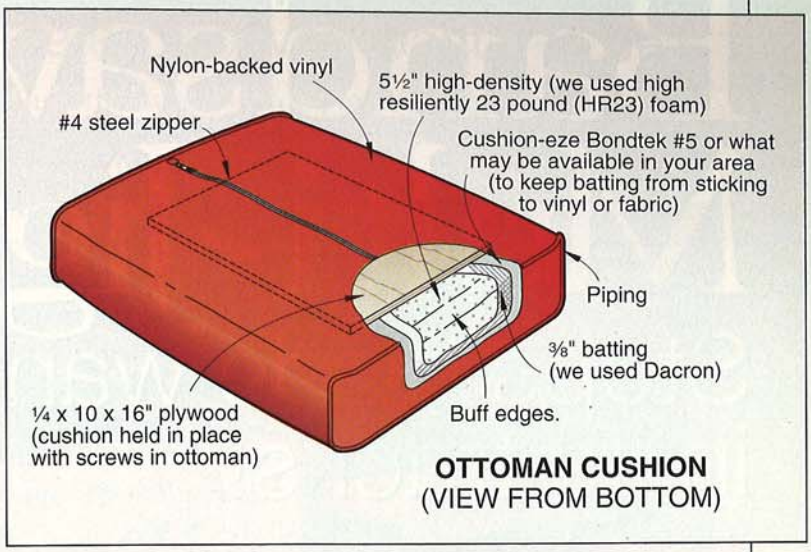


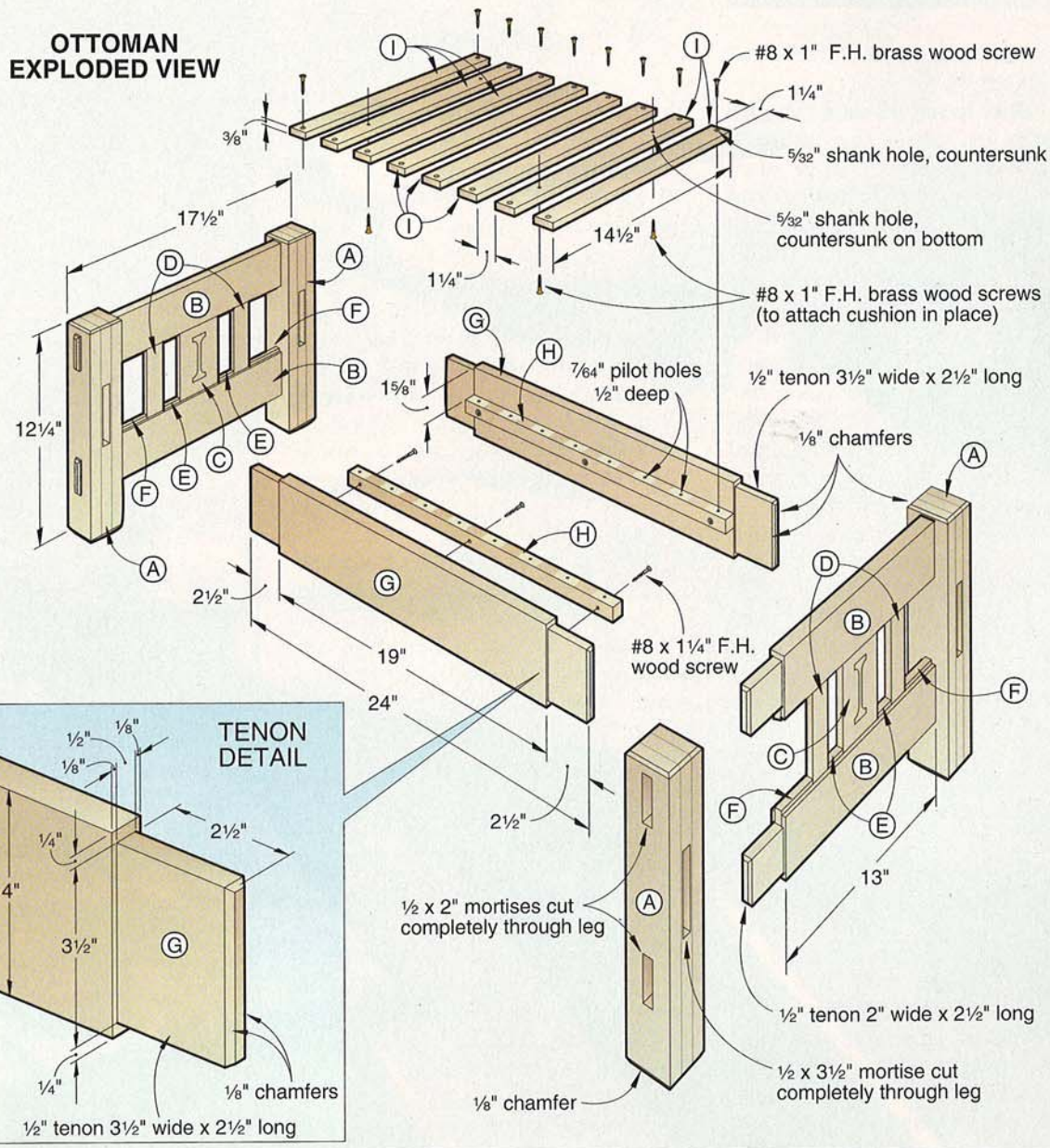
*Plane or resaw to the thickness listed in the Bill of Materials.



OTTOMAN END FRAME

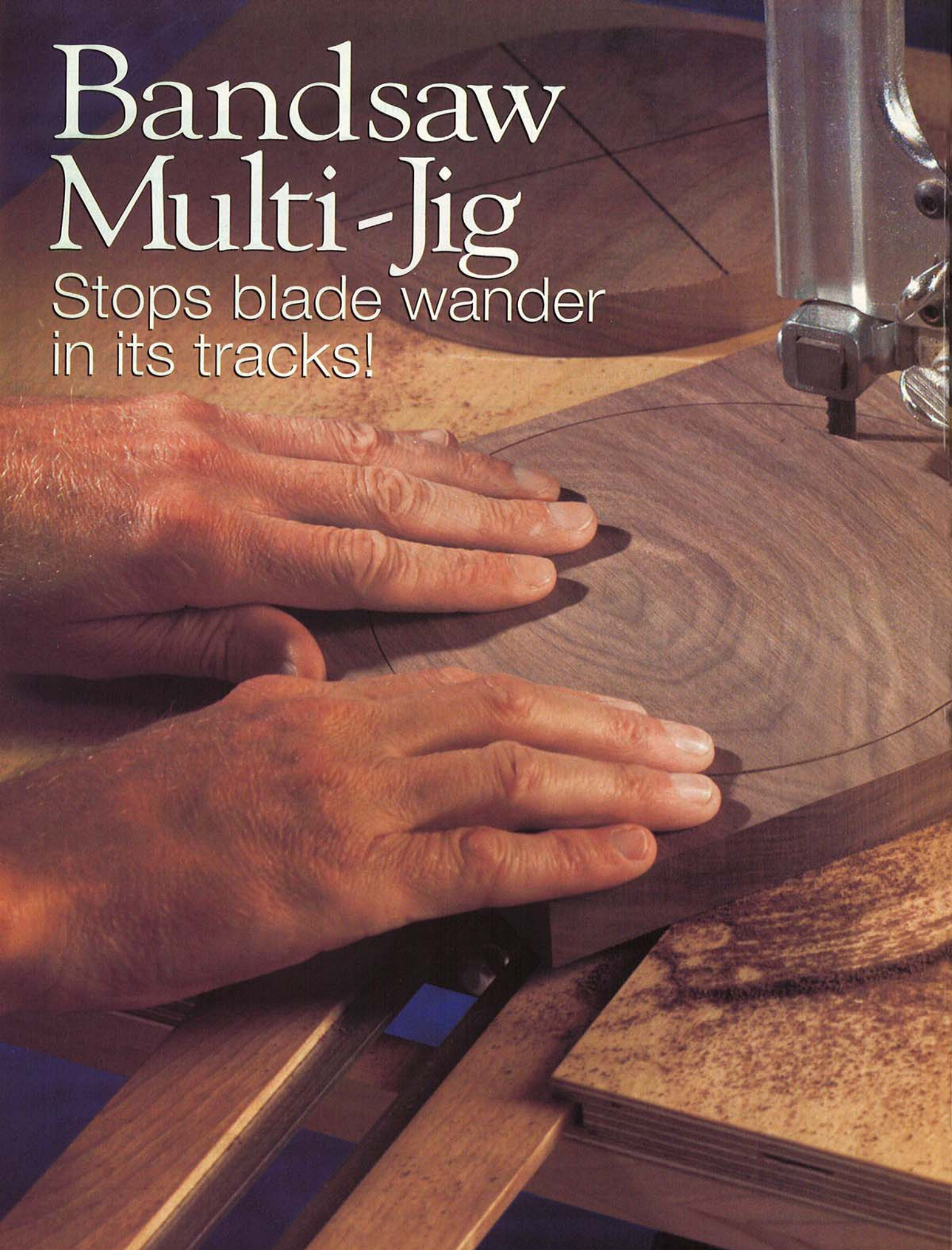

OTTOMAN LEG
(4 needed)
2¼"
2¼"
½"
2"
3½"
3½"
½ x 2" mortises cut completely through leg
5¼"
A
12¼"
2"
½ x 3½" mortise cut completely through leg
⅞"
½"
Legs are laminated from three ¾"-thick pieces.
⅞"
½"
⅞"
⅛" chamfer along top and bottom ends of leg


Nylon-backed vinyl
5½" high-density (we used high resiliently 23 pound (HR23) foam)
#4 steel zipper
Cushion-eze Bondtek #5 or what may be available in your area (to keep batting from sticking to vinyl or fabric)
Piping
⅜" batting (we used Dacron)
¼ x 10 x 16" plywood (cushion held in place with screws in ottoman)
Buff edges.
OTTOMAN CUSHION
(VIEW FROM BOTTOM)


OTTOMAN EXPLODED VIEW
I
#8 x 1" F.H. brass wood screw
1¼"
⅜"
5⁄32" shank hole, countersunk
17½"
5⁄32" shank hole, countersunk on bottom
14½"
1¼"
#8 x 1" F.H. brass wood screws (to attach cushion in place)
D
A
B
F
G
H
7⁄64" pilot holes ½" deep
1⅝"
½" tenon 3½" wide x 2½" long
⅛" chamfers
12¼"
C
E
2½"
19"
24"
#8 x 1¼" F.H. wood screw
13"
½ x 2" mortises cut completely through leg
½" tenon 2" wide x 2½" long
½ x 3½" mortise cut completely through leg
⅛" chamfer
TENON DETAIL
½"
⅛"
⅛"
2½"
¼"
4"
3½"
¼"
⅛" chamfers
½" tenon 3½" wide x 2½" long

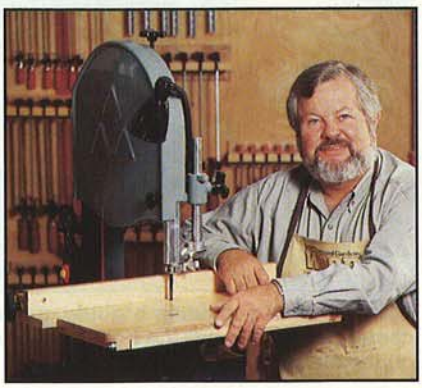
Bandsaw Multi-Jig

Stops blade wander in its tracks!



Is your bandsaw the precision multi-faceted tool you want it to be?

If not, we've just the solution for you. The jig table increases the size of your bandsaw table, and the guides steady the blade at tabletop height to minimize blade wander and increase accuracy. The auxiliary circle-cutting guide attachment allows you to cut disc after disc with amazing accuracy and consistency without having to drill a hole in your workpiece. And finally, add the easy-to-align fence shown on *page 16* for precision ripping.



*Note: This jig was designed to fit most 14" bandsaw tables. If your metal bandsaw table measures more than 10" in front of or behind the blade, you'll need to increase the depth (front to back) of the jig. If your metal table measures more than 9" on either side of the blade, you'll need to increase the width of the jig table. For larger bandsaw tables, the distance between the guides (E) must be ¼" more than the width of your metal table **plus** the length of the protrusion of the metal alignment pin.*

ANOTHER WOOD MAGAZINE EXCLUSIVE

Start with the two-part plywood table

1 Cut the two tables (A) to the size listed in the Bill of Materials. (Due to its stability and strength, we used ¾" [18mm actual] Baltic birch plywood.) Mark and cut a ¾" radius on two corners of each table where shown on the Parts View drawing.

2 Using a ¼" spline cutter in a router table or a dado blade in your tablesaw, cut a ¼" groove 5/16" deep, centered along the inside edge of each table (A).

3 Place the front table (A) on your metal bandsaw table, and center the table side-to-side from the blade. Now, stand in front of your bandsaw, and move the table toward you until it is 1¾" in front of the center of the bandsaw blade. Clamp the table in place.

4 Look under the metal table on your bandsaw, and locate any protruding webs or brackets. Then, locate and mark the centerpoints for a pair of ¼" holes on the front table, being careful not to locate the holes directly over any webs or brackets on the bottom side of the metal table. Hold a drill with a ¼" high-speed twist bit in it directly over the marked centerpoints, and make sure the drill can be positioned so the bit is perpendicular to the table. If the top of the bandsaw gets in the way, move the hole centerpoints forward, again being careful not to locate them over any webs or brackets on the bottom side of the metal table.

5 Remove the front table section from your bandsaw jig, and form a pair of counterbored slots in it where indicated on the Front Table portion of the Parts View drawing. The slots allow you to adjust the wood jig table on the metal bandsaw table.

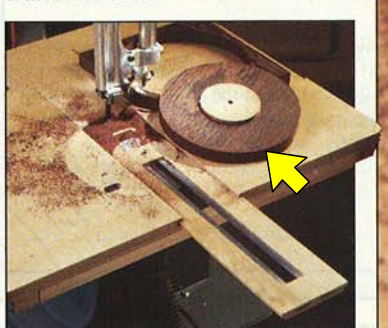
6 Reposition and clamp the front table (A) to your bandsaw table 1¾" in front of the center of the blade. As shown in *Photo A*, use a center punch to mark the *center* of the slot locations onto the metal table. Remove the front wood table, and drill a 13/64" hole through your metal bandsaw table at each marked centerpoint.

7 Tap the holes in the metal bandsaw table with a ¼-20 tap.

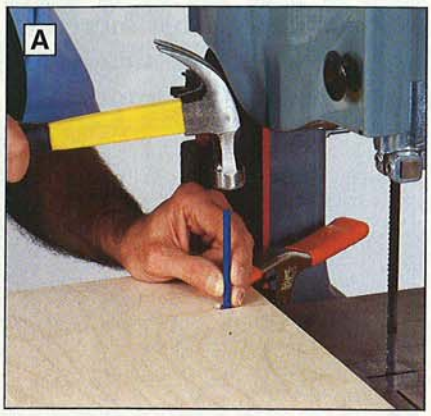
Continued

Circle-cutting guide

This handy attachment offers a breakthrough in circle cutting. Using the guide prevents start and stop marks that need cleaning up later. And it's as simple as a twist of the wrist with our sliding trammel and taped-in-place trammel disc.



Bandsaw Multi-Jig



Using the front table as a guide, use a center punch to mark the hole locations on the metal bandsaw table.

Next, add the spacers and blade guides

1 Cut the spacers (B) and blade guides (C) to size.

2 Using your tablesaw or router table, form a tongue along both edges of each spacer to fit snug but slide smoothly in the mating grooves in the front and rear tables (A).

3 Form a 1/16"-notch 1¾" long in each blade guide where shown on the Spacer/Guide drawing.

4 Drill the holes, and screw the blade guides (C) to the spacers (B). Note that you will have a right-hand and left-hand spacer/guide. Sand the top and bottom of the blade guides flush with the spacers if necessary.

Cut and secure the clamp blocks and guides

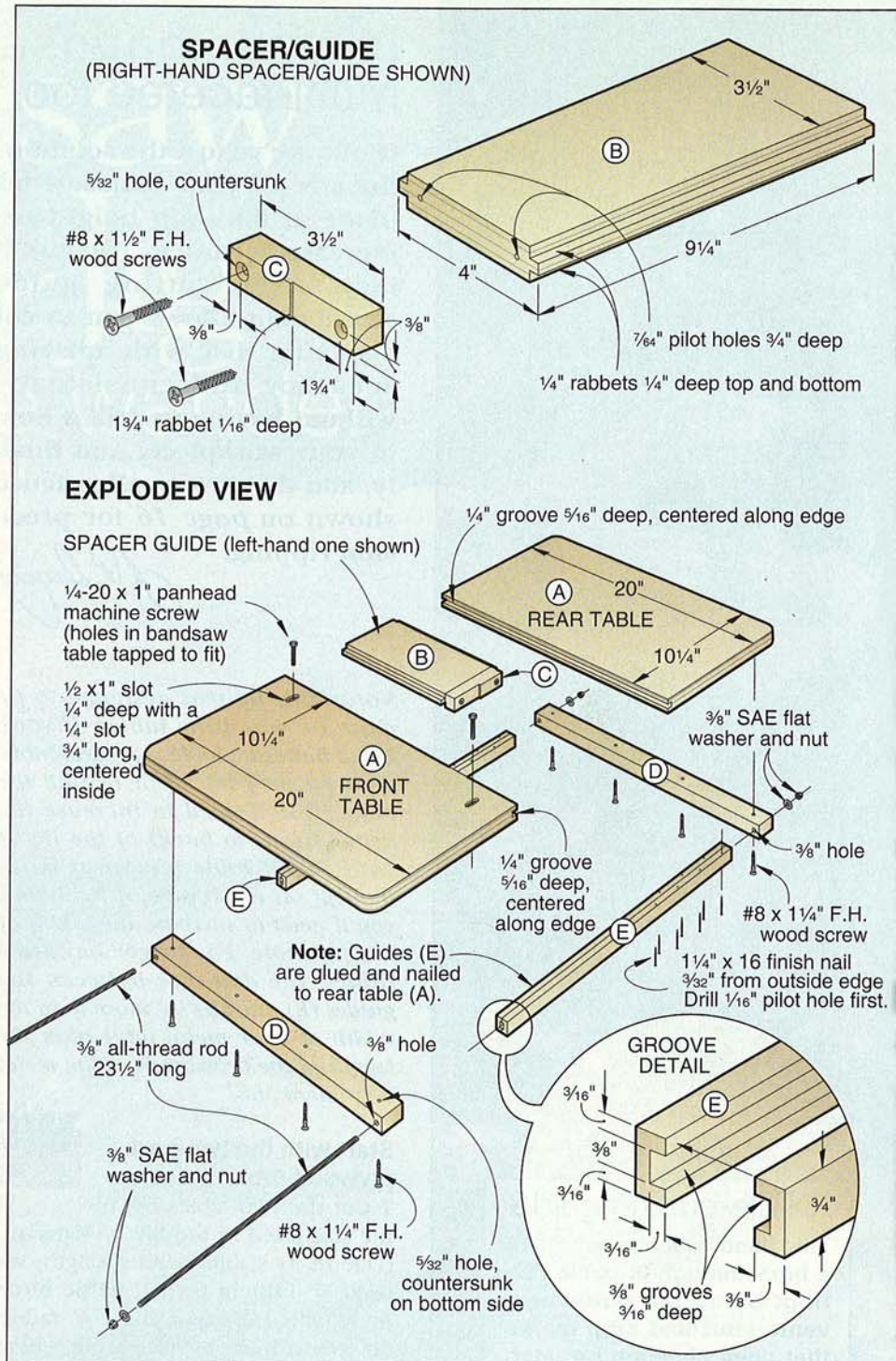
1 Cut the clamp blocks (D) to size. Mark and drill the 5/32" holes where shown on the Parts View drawing.

2 Drill a pair of 3/8" holes in each clamp block for the all-thread rod to pass through.

3 Cut two pieces of 3/8" all-thread rod to 23½" long.

4 Screw the blocks to the *bottom side* of the front and rear tables (A) where shown on the Parts View drawing.

5 To form the guides (E), rip four 3/8"-thick strips from the edge of ¾" stock 19⅞" long. Using the Groove detail accompanying the Exploded View drawing for reference, cut a 3/8" groove 3/16" deep, centered along one edge of each strip.



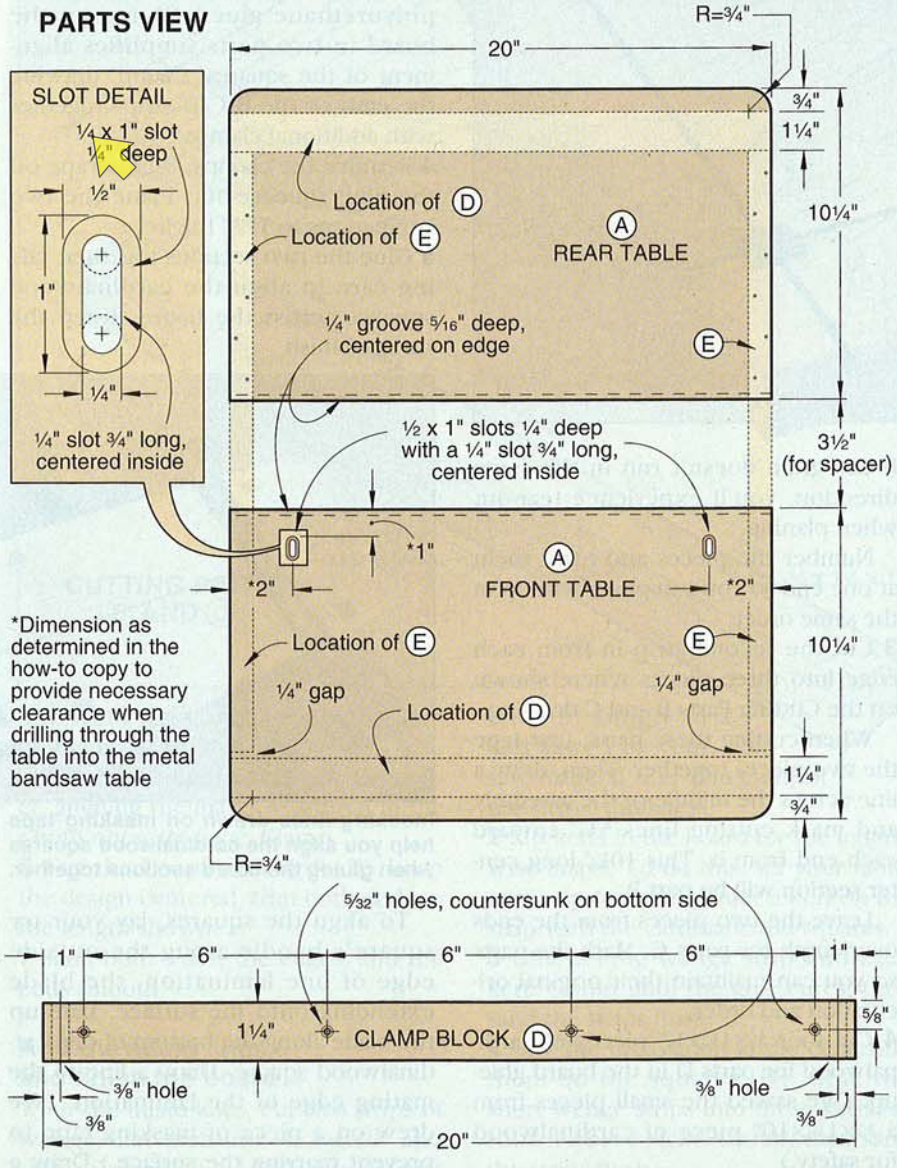
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
TABLE					
A tables	¾"	10¼"	20"	BP	2
B spacer guides	¾"	4"	9¼"	BP	2
C blade guides	¾"	¾"	3½"	B	2
D clamp blocks	¾"	1¼"	20"	B	2
E guides	¾"	¾"	19⅞"	B	2

Materials Key: BP-birch plywood, B-birch.

Supplies: 8–#8x1¼" flathead wood screws, 4–#8x1½" flathead wood screws; 1¼"x16 finish nails; 2–3/8" all-thread rod 23½" long; 4–3/8" SAE flat washers and nuts; 2–¼-20x1" panhead machine screws.

With the tables and spacers upside down, slide the all-thread rod through the clamp blocks and guides to align the pieces. Nail the guides in place.



6 Dry-clamp two of the strips together groove-to-groove. Slide a piece of ⅜" all-thread rod into the opening created by the mating grooves. The rod should fit snugly yet slide back and forth in the opening. Enlarge the groove if necessary. Then, glue and clamp the two strips together to make each guide (E). Run the all-thread rod through the square opening in each laminated guide to remove any glue squeeze-out. Wait ten minutes and repeat the reaming process.

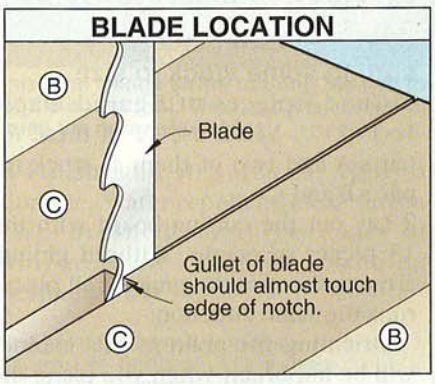
7 Sand each guide (E) smooth. Then, drill 1/16" pilot holes through each guide 3/32" from the edges where shown on the Exploded View drawing. Later, you'll drive nails through these holes to secure the guides to the bottom of the rear table (A).

8 Position the tables (A) and spacers (B, C) upside down on your workbench, with the spacers between the tables as shown in *Photo B*. Slide the all-thread rod through the clamp blocks (D) and guides (E) to align the pieces. Leave a ¼" gap at the front end of each guide (E) and next to one clamp block (D). Glue and nail the guides to *just the rear table (A)*.

Here's how to set the blade guides

Using a pair of panhead machine screws, attach the jig to your bandsaw. Adjust the wood tables and guides so the blade is positioned between the blade guides as shown on the Blade Location drawing *below*. The guides should be just next to the blade without touching it.

For changing the blade, simply remove the nuts and washers from the *front* end of the front table, and slide the *rear* table (A) off the metal bandsaw table. Change blades and reconnect the rear table.



Instructions for the circle-cutting guide begin on page 36

Cutting-Edge Cutting Board

Pretty, yet practical. That sums up our maple kitchen cutting board. Cardinalwood squares and intersecting inlaid lines give the board eye appeal, while the generous work area (more than 1 square foot) makes it a useful addition to any kitchen.

Start the cutting board by cutting some stock to size

1 Cut 13 pieces of figured maple ¾×1¼×17". You'll use 11 of these for parts A and two of them as stock for parts B and C.

2 Lay out the cutting board with the 13 pieces of maple. Without gluing, arrange them so the grain of all pieces runs the same direction.

Orienting the grain in this manner will be important when you plane the glued-up board to finished thickness. If the grain doesn't run in the same direction, you'll experience tear-out when planing.

Number the pieces and mark them at one end so you can glue them up in the same order.

3 Cut the second strip in from each edge into three pieces where shown on the Cutting Parts B and C drawing.

When cutting these parts, first tape the two pieces together. Then, draw a line across the middle of the assembly and mark cutting lines 5¼" toward each end from it. This 10½"-long center section will be part B.

Leave the two pieces from the ends overlength for parts C. Mark the parts so you can maintain their original orientation and order.

4 Cut four ¾×1¼×¾" pieces of cardinalwood for parts D in the board glue-up. (We sawed the small pieces from a ¾×1¼×10" piece of cardinalwood for safety.)

Glue two laminations to build the cutting board

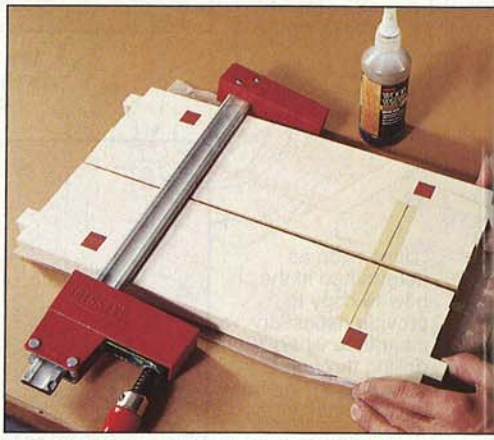
1 Cut a piece of scrap plywood ¼×9½×17½" for a gluing platform. Cover it with waxed paper.

2 Referring to the Exploded View drawing, assemble parts A, B, C, and D on the gluing platform. The overlength parts C will cause the B/C/D strips to extend past the ends of the board; center them to equalize the overhang.

3 Apply glue to the mating surfaces of parts A, B, C, and D, except leave the joint between the sixth and seventh laminations unglued. (We built our board with polyurethane glue.) Gluing up the board in two parts simplifies alignment of the squares. Clamp, drawing the ends of the B/C/D strips together with additional clamps.

4 Remove the clamps, then scrape off the glue squeeze-out. Plane the two laminations to 1⅛" thick.

5 Glue the two sections together, taking care to align the cardinalwood squares across the board. Keep the surfaces flush.



Indexing lines drawn on masking tape help you align the cardinalwood squares when gluing the board sections together.

To align the squares, lay your try square's handle along the outside edge of one lamination, the blade extending onto the surface. Line up the blade along the bottom of one cardinalwood square. Draw a line to the mating edge of the lamination. (We drew on a piece of masking tape to prevent marring the surface.) Draw a

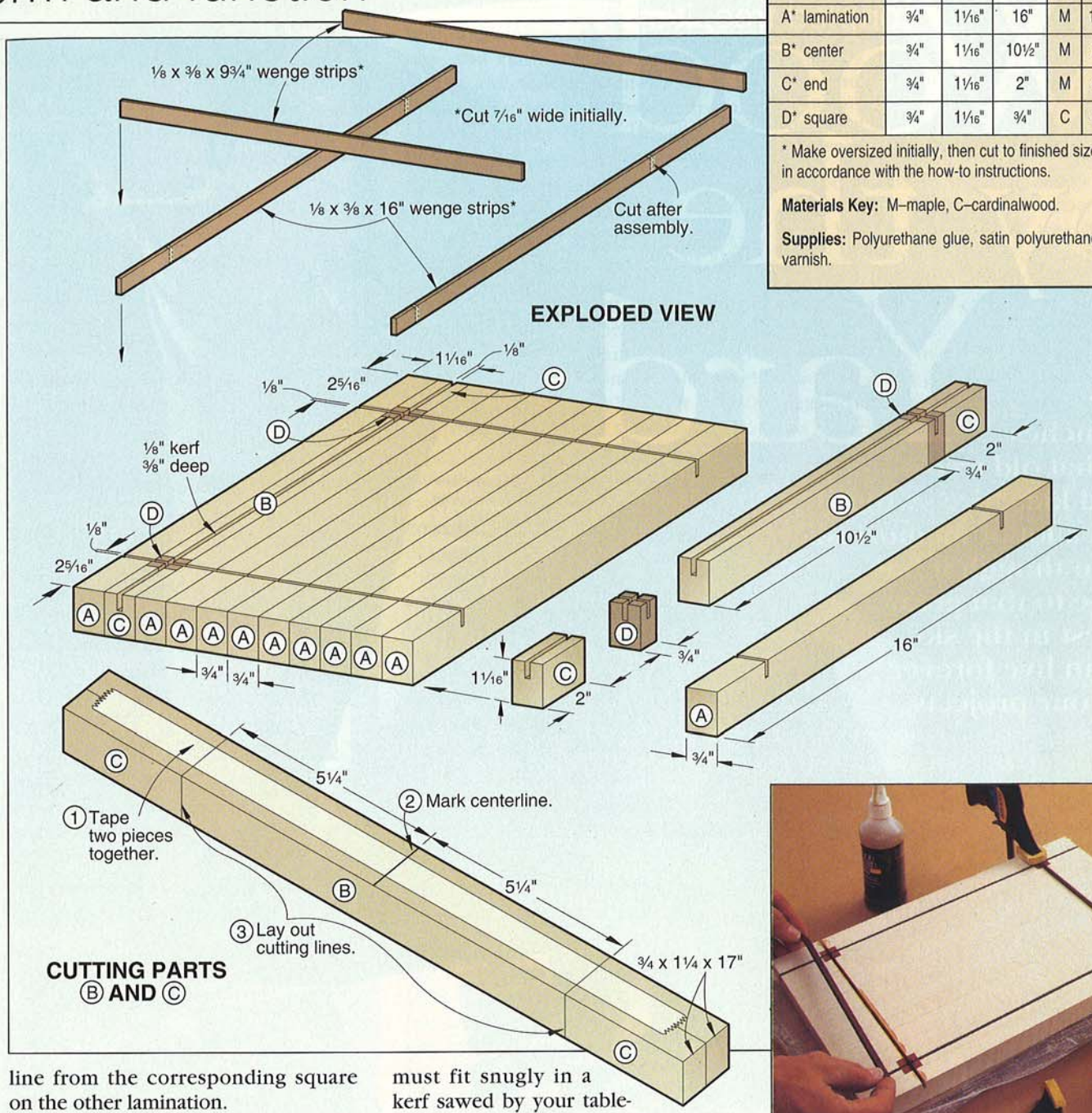
A perfect pairing of form and function

Bill of Materials					
Part	Finished Size			Matl.	Qty.
	T	W	L		
A* lamination	¾"	1 1/16"	16"	M	11
B* center	¾"	1 1/16"	10½"	M	2
C* end	¾"	1 1/16"	2"	M	4
D* square	¾"	1 1/16"	¾"	C	4

* Make oversized initially, then cut to finished size in accordance with the how-to instructions.

Materials Key: M–maple, C–cardinalwood.

Supplies: Polyurethane glue, satin polyurethane varnish.



line from the corresponding square on the other lamination.

Then, glue the two sections together, aligning the marks as shown in the photo *opposite page*. Clamp.

6 Cut the board to length. To keep the design centered, trim both ends to the length shown.

7 Sand both sides, the edges, and the ends smooth.

Add the inlaid lines, and finish the board

1 For the inlaid lines, cut two strips of wenge that measure ⅛×7/16×10" and two more ⅛×7/16×16¼". The strips must fit snugly in a kerf sawed by your tablesaw blade; if they don't, adjust the strips' thickness.

2 Rip kerfs in the board for the lengthwise inlays. To do this, set your tablesaw's rip fence to center a kerf on the strip with the cardinalwood squares.

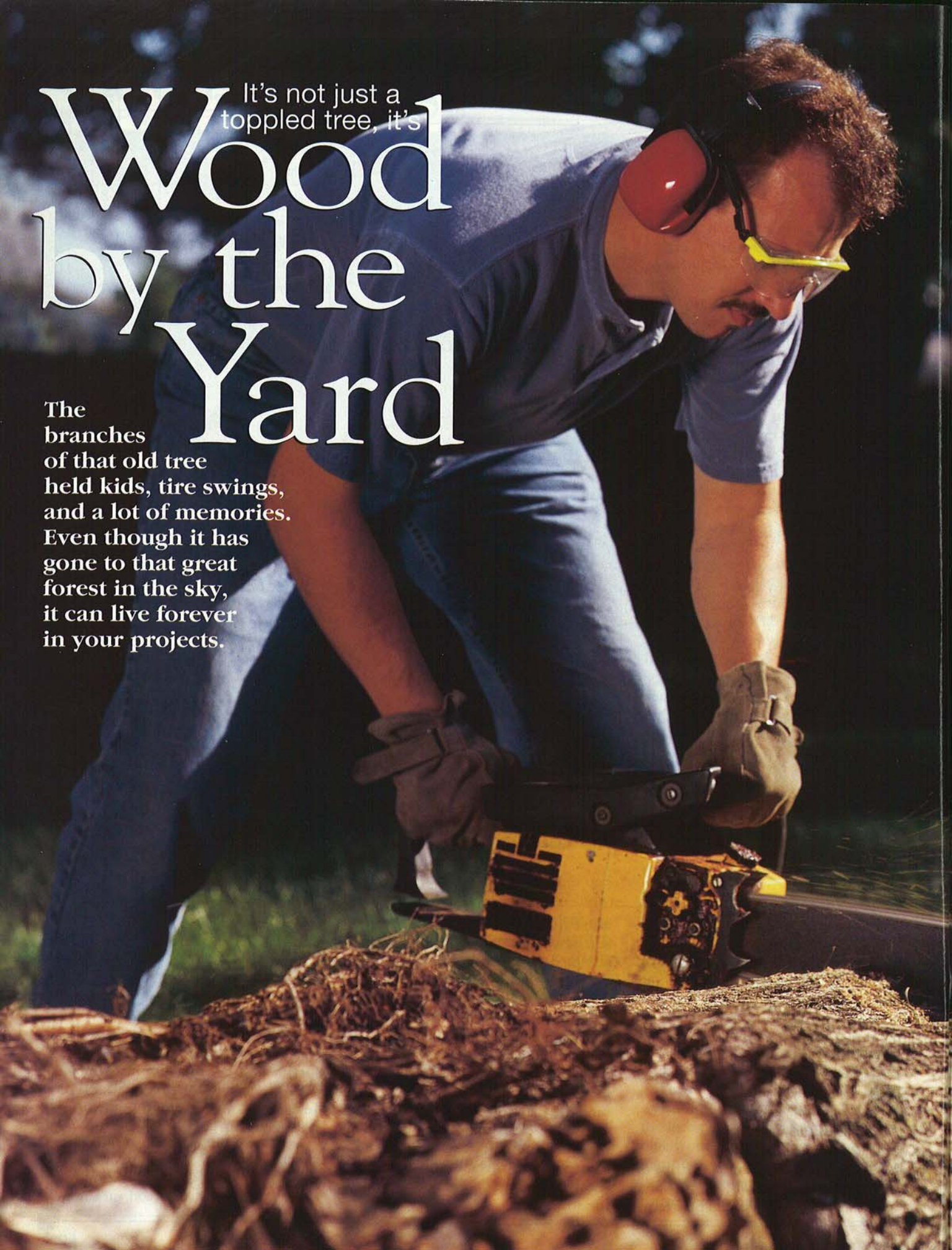
3 Glue a long wenge strip into each kerf. Clamp until the glue cures, then sand the strips flush.

4 Saw the cross-grain kerfs, centering them on the squares (D). Glue the short wenge strips into these kerfs, as shown *above right*. Clamp, then sand the strips flush.

Inlay the wenge strips running the length of the board first. Then, cut the kerfs and inlay the crosswise strips.

5 Finish-sand all surfaces. Apply a durable, water-repellent clear finish. (We brushed on three coats of polyurethane varnish, sanding between coats.)

Project Design: James R. Downing
Photographs: Hetherington Photography
Illustrations: Roxanne LeMoine; Lorna Johnson



It's not just a toppled tree, it's

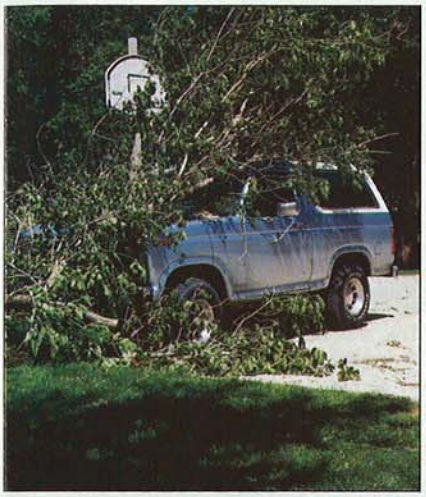
Wood by the Yard

The branches of that old tree held kids, tire swings, and a lot of memories. Even though it has gone to that great forest in the sky, it can live forever in your projects.

When life gives you lemons, make lumber

Recently, after a vicious thunderstorm rolled through Des Moines felling thousands of trees, I climbed from the storm shelter to discover a downed elm in our own backyard. Rather than chop it into firewood, I called on *WOOD*® magazine's resident backyard sawyer, Dave Henderson, for help in turning the tree on the truck into woodworking treasure.

Dave Campbell
General-Interest Editor



What can you make of all this?

Crosscutting the log may uncover treasures like this spalting or the beautiful birdseye shown *below*.

With a chainsaw and stationary bandsaw, you can harvest beautiful bowl blanks and stock for small projects from a tree that happens to fall your way. But don't expect big stacks of 16' or even 8' lumber, unless you have a humongous tree and want to call in someone to mill it for you (see "When To Call In A Pro," box *below*). Still, a 12"-diameter trunk 12' long can yield loads of 3-4'-long stock.

Because the wood of freshly fallen trees is soft, many turners like to work green wood. You can turn a bowl with a diameter just smaller than the tree's trunk, and about half that deep.

Before you fire up the chainsaw, give the tree a good going over. How straight is it? Unbowed trunks split easier and straighter than their curved counterparts. Bent trees offer less usable flat stock.

Look for obvious signs of rot, such as hollow branch pockets and loose bark. Rap on the trunk with a hammer or butt of an ax. If it sounds like a drum, it's pretty hollow, and you're probably wasting your time. On the other hand, a good solid thwack! means you may have a winner.

Now examine the outside of the tree for features. Small knotholes on an oak tree mean you may find birdseyes inside. If the roots are exposed, you may uncover some stunning burl buried within. A tree stump with mushrooms growing from the top of it could be variegated with colorful, ornate lines called spalting (see photo *above*).

Next, crosscut the tree and look for the innermost growth rings (the *pith*) and cracks (*checks*). The pith appears as widely spaced rings that you'll want to avoid. Why? Because that early growth is weaker and less stable than the tighter-ringed adult wood.

Can you use bug-infested wood? Sure. If it's stable, it can be beautiful. Critters love the wet wood, but many will vacate as it dries. You can hit a moderately insect-infested log with insecticide to evict them faster.

Now that you've given that backyard log a thorough inspection, plan your work. But remember the old saw about best-laid plans—your tree may surprise you with beautiful spalting, or it may be rotten to the core.

When to call in a pro

We know you'll enjoy making projects from wood that falls your way, but let's face it: There's only so much you can do with a chainsaw and bandsaw. Here's how to tell a weekend's work from a job for a portable mill:

•***Diameter of tree.*** To figure out how much your bandsaw can handle, raise the blade guard as far as it will go and measure between it and the tabletop. If you split your tree before sawing, you can work a tree about twice the diameter of that height.

For example, most stationary bandsaws have a cutting height of at least 6", meaning you can saw a 12" diameter tree; a bandsaw with a 6" riser block can cut about twice that.

•***Weight.*** Green wood can weigh more than twice as much as the kiln-dried wood you get at the hardwood store. Large-diameter trees should only be moved in short sections or with special lifting equipment, such as a hoist.

•***Time.*** If you scarcely have time for meals between soccer practice and dance recitals, consider hiring someone with a portable mill to handle the chore. You'll still get a lot of satisfaction from building a project with your own wood.

So how do you find someone with a portable mill to do the job? Some portable-mill manufacturers, such as Wood-Mizer (800/553-0182) and TimberKing (800/942-4406), maintain a nationwide database of mill owners. Call them for a list of people you can contact in your area.

Continued

Wood by the Yard

Let's get to work and make flat stock

Before tackling the tree, build the jig shown *below* to give you a reference edge for ripping the stock. Set up your bandsaw with a sharp blade with a low number of teeth per inch (TPI), ideally the widest 3 TPI skip-tooth blade your saw can handle. And remember, you're working wet wood here, so before you start cutting, give your saw's table two or three coats of paste wax to prevent rust.

Using a chainsaw, cut the tree trunk into manageable lengths. Wet wood is weighty, and long pieces are cumbersome, so don't kill yourself getting long pieces. 40–42" is plenty.

If the tree's diameter is too large to rip on your bandsaw, look for checks in the end grain. The wood wants to split along those checks anyway, so exploit that weakness.

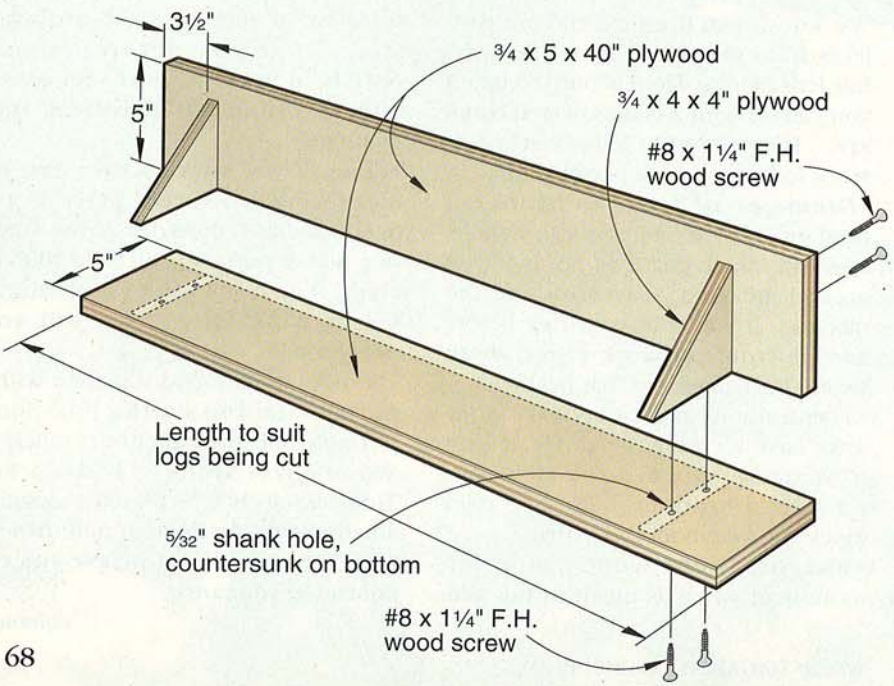
Drive a splitting wedge or hatchet into the check. The resulting split will follow the curve of the grain. Straight-grained species like oak, ash, and walnut split easier—and straighter—than others. (If a neighbor or buddy has a powered log-splitter for making firewood, borrow it, or enlist their help.) Once parted, flatten the faces as best you can with a hatchet.

Whether you have a full-diameter log or a split section, build the jig *below* and attach it to the log as shown at *right*. Set your bandsaw's fence to split the log (or clean up the split face), and rip it.

Detach the log from the jig, and rotate it so the freshly cut face is down on the table. Reattach the jig and make another cut perpendicular to the first. Remove only enough stock with this cut to establish a straight edge the length of the workpiece. Detach the jig from the log.

With the log's new straight edge against the rip fence, make another cut on the opposite edge to establish a parallel straight edge. Now set your bandsaw's fence to cut ¼" thicker than you want your finished stock to be (to allow for shrinkage when dry), and clamp a feather board to the saw table. Keeping one edge of the log against the fence, rip off slabs of stock. Stack the stock in the order it came off the log. This will help you keep things in order for matching grain in your project later on.

Cutting flat stock from round trees needn't be as precise as most other cuts you make in woodworking. Regardless of how careful you are, you'll still have to plane it before you can use it, because wood shrinks, twists, and cracks as it dries. But don't be wasteful either. From a 40" length of 9" diameter elm, we got eight pieces of inch-thick stock—enough to make two small cabinet doors.


3½"
5"
¾ x 5 x 40" plywood
¾ x 4 x 4" plywood
#8 x 1¼" F.H. wood screw
5"
Length to suit logs being cut
5/32" shank hole, countersunk on bottom
#8 x 1¼" F.H. wood screw

Splitting the wood along existing checks releases the tension created as the wood dries, and also minimizes future checking and splitting.

Drive a couple of long drywall screws into the log through the jig's back. The jig will act as a surrogate straightedge until you can cut one.

If you need to choose, it's more important to keep the jig flat against the fence, than flat on the table.

After truing three faces, cut slabs of wood about ¼" thicker than the final thickness you need.

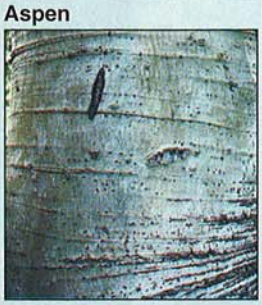
Backyard best bets

Can't tell a sugar maple from a cottonwood? Take a good look at the bark and foliage of your tree and compare them to this handy chart to help identify your backyard log. These photos show the best tree species for woodworking, where you're likely to find them in the U.S., and what type of projects each wood is best suited for.

= Furniture
= Carving
= Turning
= Outdoor
= General Woodworking

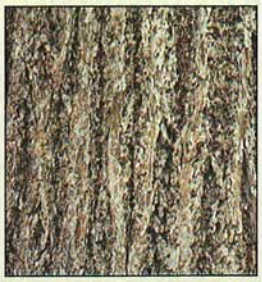
HARDWOODS

Aspen



North, West Northeast

Basswood

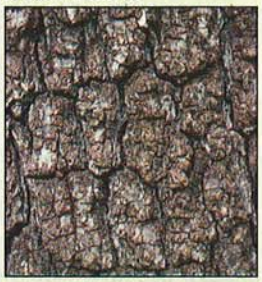


Northeast, Central

Black Cherry

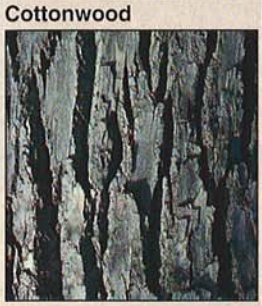
East, South, Central

Black Walnut



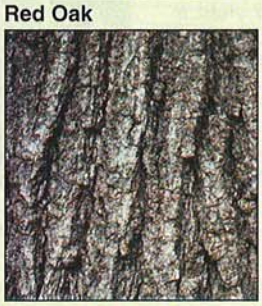
East, Central

Cottonwood



East, South, Central

Red Oak



East, South, Central

Sugar Maple

North

White Ash

East, South, Central

Yellow Birch

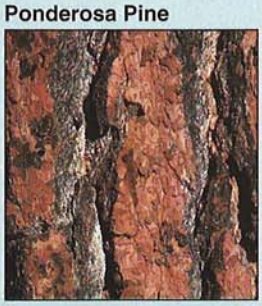
North

SOFTWOODS

Douglas Fir

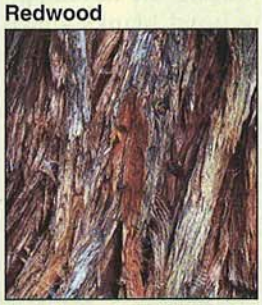
Northwest

Ponderosa Pine



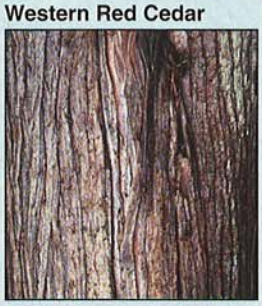
West, Southwest

Redwood



West

Western Red Cedar



Northwest

White Pine

North, East

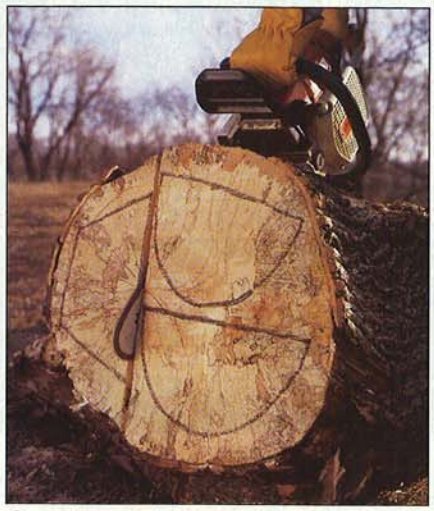
Wood by the Yard

Bowls and squares: Turning the tree

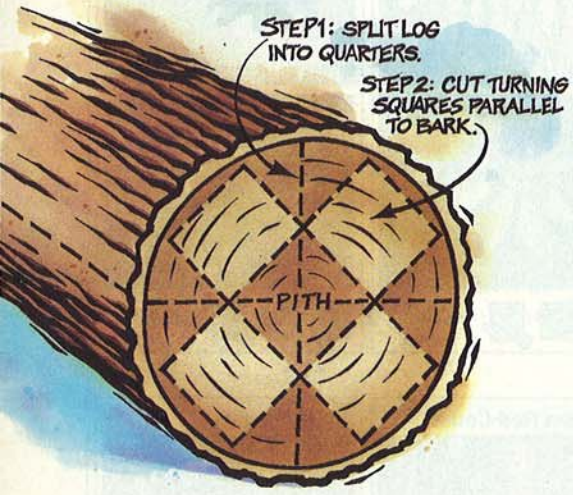
If woodturning is more your thing, you'll find a banquet table full of bowl blanks and turning squares in backyard logs. Cut turning squares in the same manner as if you were making flat stock. But, to maximize size and still avoid the pith, cut parallel to the bark as shown in the drawing *below*. As they dry, your turning squares will shrink more on the outer rings than the inner rings, giving you a sort of flattened-pyramid profile.

For bowl blanks, examine the cut cross-section of your log. Determine the best location for your blank, based on grain figure, the location of the pith, and any existing checking.

As shown in the photo at *right*, mark the location of your bowls on the log's end with a marker, chalk, or crayon. Measure the diameter of your largest bowl, add a few inches to that dimension, and cross-cut the log to that length.



Our elm wasn't large enough to yield a bowl blank, but yours might turn out some beautiful spalted stock for turning.



Now look at the end grain of the fresh cut. If there are large cracks or other problems, you might have to rethink the placement of the blanks within the log or the number of blanks you can harvest.

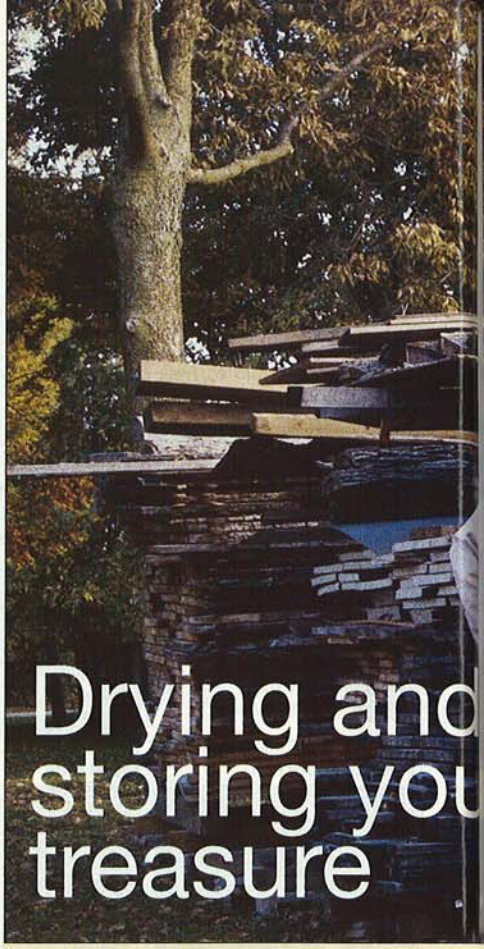
Separate the blanks from one another by chain-sawing with the grain, roughly along your layout lines. Because you've opened up more grain to the air, you've also speeded up the drying process and your blanks may start checking within a few hours. To minimize that, coat only the end grain with paraffin wax or latex paint. Don't discard the trimmings from harvesting bowl blanks and flat stock; resize them on your bandsaw and use them for turning pens.

Where else to find "found" wood

If you've not been fortunate enough to lose a mighty tree in your own backyard, don't be discouraged. There are many places to hunt for found wood. For example, you might find some nicely figured wood, such as Russian olive or pear, in your firewood stack. Sliced thin, they can make elegant boxes.

If your neighbor loses a tree, tell him you'd be happy to come and take it away. Once he wipes the look of surprise from his face, he'll probably even help you load it.

Road and residential construction sites are another great source for wood. Get the site manager's permission before removing any stock.



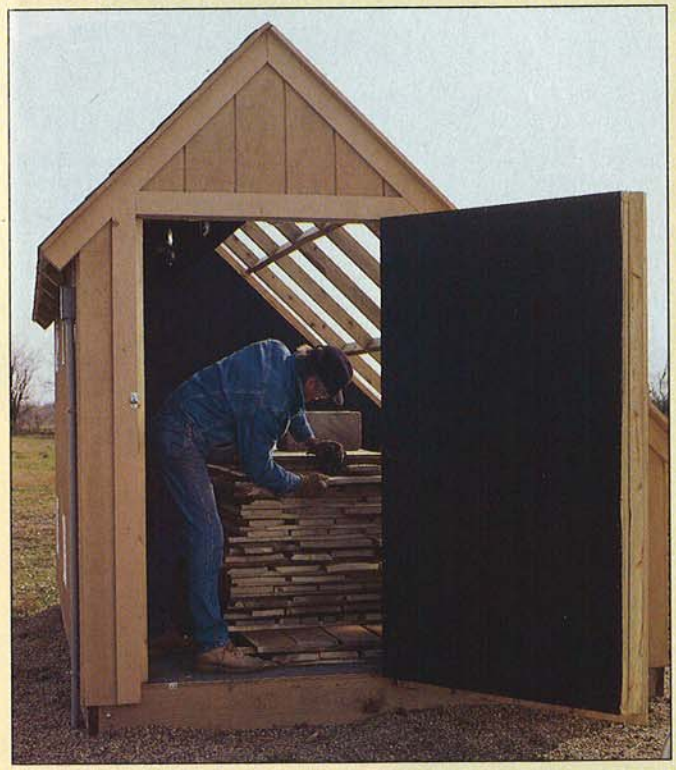
Drying and storing your treasure

Unless you're a turner who prefers to turn green stock, you'll have to dry your wood before you can use it. We could do several articles (and we have) just on methods of drying your wood.

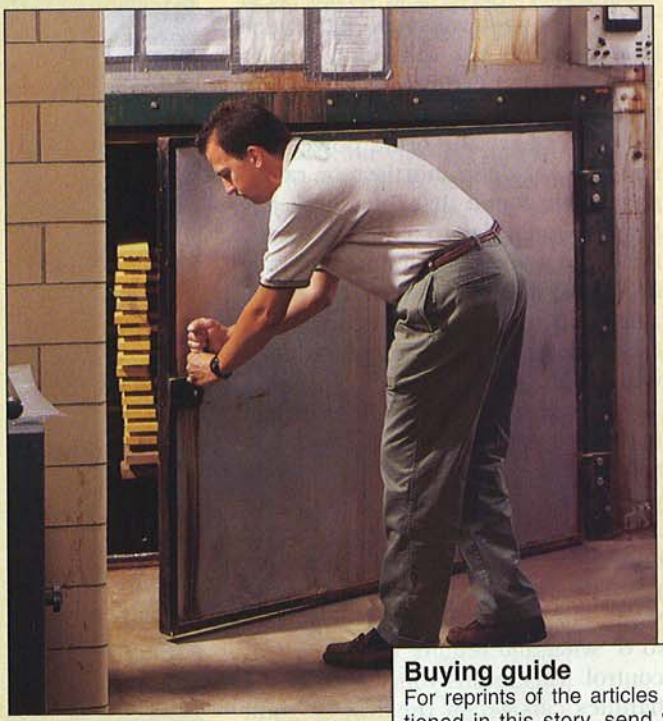
These photos show several ways to get the moisture out, and the issues of *WOOD*® magazine in which each appeared. For information on getting reprints of any of those articles, see our Buying Guide on *the opposite page*.

If you turn bowls when they're green, you can "nuke" them in a hurry in your microwave. Besides the quick dry, you can further manipulate the shape of your bowl. Learn how in *WOOD* magazine #33 (February 1990), pages 46-49.

It takes green wood about one year per inch to dry to a level that's suitable for woodworking. This slower method may net you more stock, as you'll see less cracking and twisting. For more about air-drying lumber, see *WOOD* magazine #97 (June 1997), pages 68-71.



If you get really get excited about backyard logging, you may want to build a solar kiln to hasten the process. What would take a year air-drying, you can do in about 6 weeks. For complete plans, send $9.95 to "Solar Kiln" at the address shown in the Buying Guide.



Can't stand the wait while your lumber loses water weight? Check with your state's Department of Natural Resources for a list of wood-drying kilns in your area. This kiln is on the campus of Iowa State University.

Buying guide

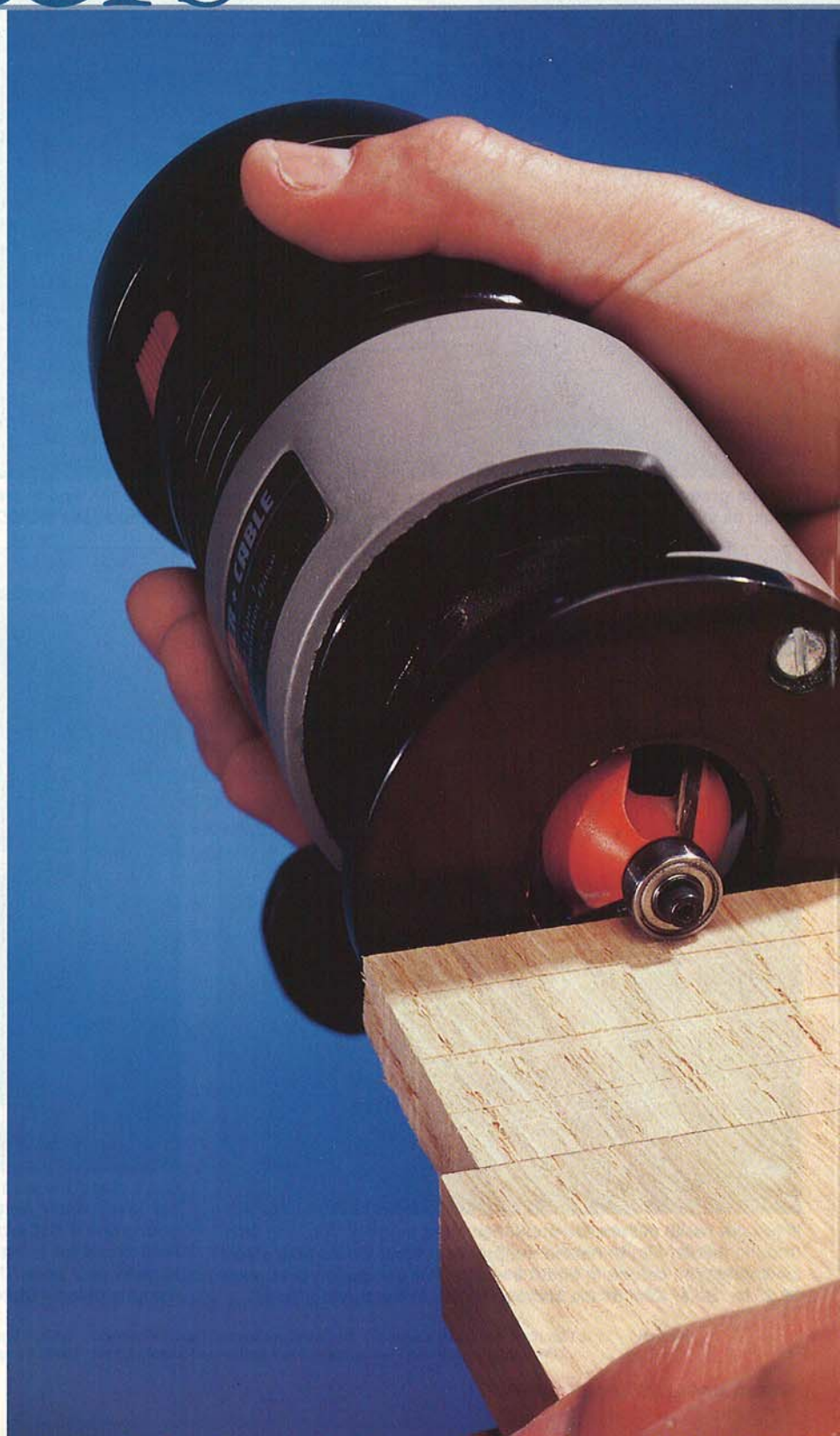
For reprints of the articles mentioned in this story, send $5.00 for each article requested to:
WOOD magazine Reprints
1716 Locust St., GA-310
Des Moines, IA 50309-3023

The *National Audubon Society Field Guide to North American Trees* is available from most bookstores, or visit their website at www.audubon.org.

Written by Dave Campbell with Larry Clayton Technical consultant: Dave Henderson Illustrations: Roxanne LeMoine
Photographs: Baldwin Photography, Sonja Bullaty and Angelo Lomeo, David Cavagnaro, John A. Lynch

Trim Routers

They're also called "laminate trimmers," but these one-handed tools can do lots more, including some tasks two-fisted routers just can't touch.



When faced with the prospect of choosing a router, most woodworkers opt for a full-size model with 1½ or more horsepower. And if you plan to have only one router, that's probably the best way to go. But if you're in the market for a second router, consider investing in a lightweight, highly maneuverable trim router. We put nine of them to the test. (Note: The Ryobi and Craftsman models we looked at are virtual clones, so we've lumped them together.)

Big isn't always better

For many woodworking operations, using a hefty router that weighs in at 7½ to 9 pounds and puts out several horsepower is like sending a man to do a boy's job. Trimmers weigh less than half that much. And although they don't have the brute power you need to cut deep mortises or raised panels, we found that they work just fine for most day-to-day shop tasks, including a few the big boys can only dream about. In the *WOOD*® magazine shop we use a laminate trimmer for about half of our handheld routing work, with good reason.

A one-handed router's lighter weight makes it more controllable, with less mass hanging over the edges of workpieces. With bodies averaging about 2½-3" wide, the machines operate comfortably with one hand, leaving your other hand free to steady the work. Full-size routers have bodies up to 6" wide and require two hands for control. This means your hands or the handles can get in the way in tight quarters.

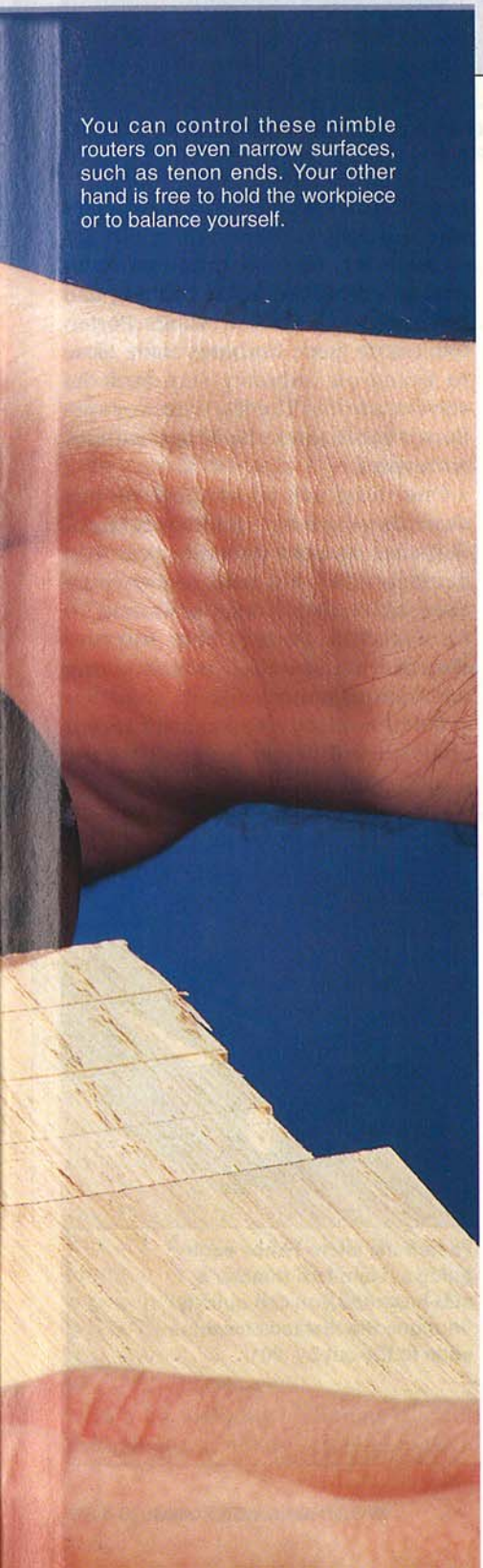
Laminate trimmers have smaller bases too, just 2½-4", compared to 5½-6" for full-size machines. This takes some getting used to because

Fast Facts

At ⅝ to ⅞ horsepower, most trimmers can handle bits up to 1⅛" in diameter, and a few can work with 1½" bits if you remove the sub-base. (Trim routers handle bits this large when taking light cuts, such as rounding edges.

Light weight and high speed make one-handed routers especially adept at working vertically—mortising hinges, for example—and at other tasks in which the weight of the router is not supported by the workpiece. And, you can balance them on a ¾"-thick edge when trimming thin edge banding on sheetgoods.

Prices? Most of the units sell in a narrow price range from $100 to $110. The Makita sells for about $130, perhaps because of its limited availability. The built-like-a-tank Porter-Cable 310 sells for $160. (These are mail-order prices; you may find that local prices are comparable or higher.)



You can control these nimble routers on even narrow surfaces, such as tenon ends. Your other hand is free to hold the workpiece or to balance yourself.

the overall height-to-base-size ratio can make the small routers feel a bit tippy. We found that gripping the machines low on the housing provides better control and soon becomes a habit. And all the units we tested have a plastic sub-base attached with screws, so you can replace it with a larger shop-made version of polycarbonate if you want more stability.

What bits can they run?

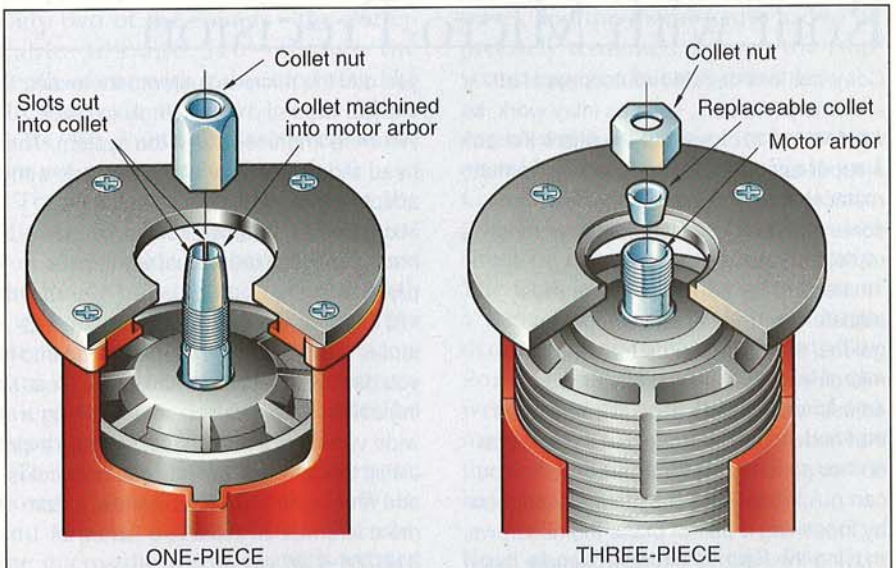
All the units we tested use only ¼"-shank bits. Check the chart at the end of this article and you'll see the size of their base openings limits bit widths to a maximum around 1⅛", and the Hitachi's base opening measures just 1". Consider how many of the bits you use regularly that are these diameters and less, and you can see that a lot of the jobs you do with a full-size router also could be done with these smaller ones. Just a few examples: Putting a decorative edge on a table or chest top or just relieving an edge, making shallow dado or rabbet cuts, freehand decorative routing, template routing, edge-slotting, cutting hinge mortises, even making freehand signs. Add trimming laminate to this list and you have a router that probably will find a lot of use in your shop.

How we tested the routers

We used a 1"-diameter ogee bit to determine how easily and precisely we could adjust the depth of cut, as well as how much power each unit puts out and how it handles. These tests were run in red oak and pine, using the same bit in each router.

For a second test of power and control, we used a ¾" straight bit to plow a ½"-deep dado across both materials. We also did some flush edge-trimming to check bit visibility and how easy it is to keep the router base flat on the surface of your work.

Continued



TRIM ROUTER COLLETS: TWO WAYS TO PUT THE SQUEEZE ON BITS

Trim Routers

If you're into template routing, consider whether a trimmer accepts standard template guide bushings, such as this Porter-Cable set.

We recorded noise levels with a decibel meter; these are expressed in numerical values on the chart. And, while conducting all of these tests, we continuously took note of such things as ease of bit- and base-changing, bit visibility, handling, and depth-lock ease of use.

How these tools differ

None of these one-handed routers has self-releasing collets, but all released easily. The Craftsman/Ryobi machines use a one-piece collet with a nut that squeezes the end of a split arbor as shown in the drawing on the *previous page*. The thing to remember with this system is that if a bit slips or the collet wears, the router will need a major repair or complete replacement. The other tested routers have three-piece collets, like those on full-size machines (see same drawing). With these you easily can replace a worn or damaged collet.

Because these routers are designed to trim thin laminate or work with smaller edge-forming bits, they have a limited depth of cut. At 1⅝", the Makita cuts deepest. The others average about 1" of motor and collet travel, except for the Bosch, which measures only ½". These dimensions let us make full use of any bit that would fit through the opening in the base, except that with the Bosch we occasionally had to extend the bit shank ¼–⅜" from its bottomed-out position in the collet to make sure the full profile was exposed.

If you plan on using round-over or ogee bits in these routers, pay attention to the column in the chart that shows the opening size in the base with and without the plastic sub-base in place. The larger openings, such as those in the Porter-Cable 309 and 310 or the Craftsman/Ryobi, let you use larger bits with a homemade or accessory sub-base.

Consider, too, whether you can mount a template guide bushing and how many sizes are available. Porter-Cable-style guide bushings come close to being an industry standard. As shown *above*, the DeWalt accepts Porter-Cable guide bushings without an adapter.

One thing that all of these routers share is relatively quiet operation. Full-size routers average over 100 decibels (dB), but trim routers purr along noticeably quieter at around 70 dB. Only the Porter-Cable 309 produced a high-pitched whine, along with normal motor noise.

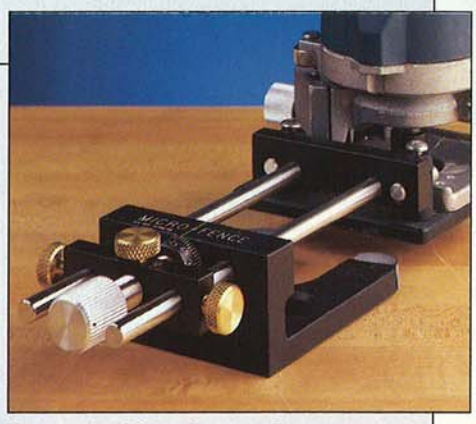
We also discovered that different models use different materials for the

Rout with Micro-Precision

Compact, one-handed routers excel at extremely fine cuts, such as inlay work, so we decided to check out the Micro Fence, a super-accurate edge-guide system that replaces the straight edge guides that come standard or as an option for most routers on the market today.

Instead of the simple screw or slide adjusters on the original equipment guides, the Micro Fence features a micrometer that allows direct readout adjustments as fine as .001". The head that houses the micro-adjust screw rides on two polished stainless steel bars. You can quickly make large-scale adjustments by loosening a pair of brass thumbscrews, moving the head to the approximate location, and retightening the screws. Then, you dial the micro-adjuster to the exact cut you want and lock it firmly in place. We were impressed with the system. The head slides smoothly along the rods with absolutely no slop. And because the Micro Fence is made of stainless steel, brass, and aluminum, rust won't be a problem.

At $125 for the basic package, the system is pricey, but well worth looking into if you need speedy, highly accurate locating ability. You also can select among a wide variety of accessories, such as a circle jig attachment that lets you cut circles and arcs from 6 to 48" in diameter. For more information call Micro Fence at 818/766-4367 or e-mail: microfence@aol.com



Fasten the Micro Fence edge-guide system to a trimmer's sub-base and you can quickly fine-tune the distance from the edge to the cut by .001".

lower bearing housing. The Porter-Cable 310 and 7310, DeWalt, and Bosch all have aluminum here; the rest encase the bearings in plastic. We believe metal works better because it helps dissipate the heat generated by the bearing and motor. Bearings that run cooler should run longer.

An up-close comparison of important features

The following eight criteria affect the convenience and all-around user-friendliness of each tool. Consider how you use a router when prioritizing each of these areas.

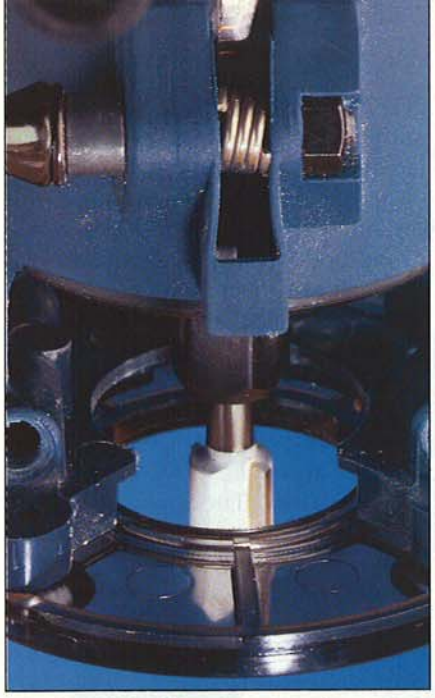
How easy is it to change bits? Most of the routers we tested require a pair of wrenches to change the bit—one to lock the arbor and another to tighten or loosen the collet. These worked well, with adequate room to get the job done.

The Porter-Cable 7310 includes a spindle lock so you can change the bit with a single wrench. This means one less wrench to keep track of, but we found the motor housing's small size provided marginal leverage for tightening or loosening the collet.

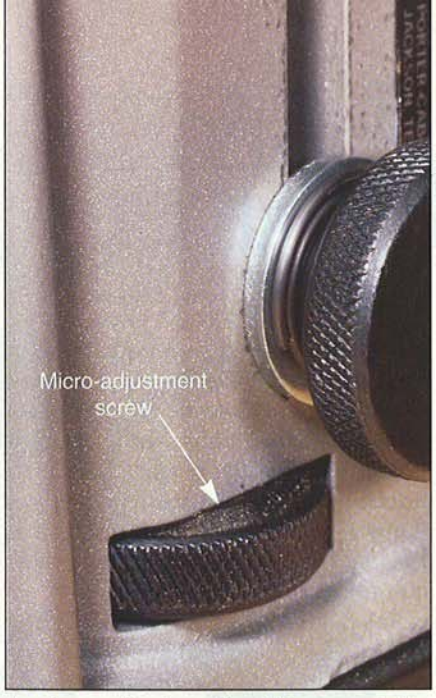
The DeWalt also has a spindle lock, but you must remove the base to access it. You can easily do this without tools, but the spring pressure on the lock seemed too heavy. And keeping it engaged while holding the router body was really more work than we wanted to do.

The Bosch fared better in our bit-changing assessment, but earned just a good rating because of the way its two-wrench system works. Unlike wrenches that both fit onto the arbor, the Bosch wrenches each have one unusual end that slips into a slot at the brush end of the motor housing. This engages a pair of flats on that end of the armature shaft to hold it while you change bits with the opposite end of the other wrench. The system operates much like the spindle locks on the Porter-Cable 7310 and DeWalt, but the danger (and Bosch warns about it in its manual) is that, if the wrench isn't fully engaged in the arbor, the wrench or the arbor can be damaged.

How's bit visibility? Though it's not critical for laminate trimming, with lots of general woodworking jobs, you want to keep your eye on the bit. Only three of the nine routers got an "E" (for excellent) in this category—Hitachi and the Craftsman/Ryobi twins. We gave Hitachi the nod because its baseplate has an open side that provides a good view of what the bit is doing. With the Craftsman/Ryobi units, a clear sub-base lets you see the bit as shown *above.* The other routers have solid bases that limit visibility. And a chip guard on the DeWalt makes visibility almost nil.



The Ryobi and Sears routers have clear plastic sub-bases that make for excellent bit visibility.



A micro-adjuster, like this one at the base of the Porter-Cable 7310, lets you precisely set the depth of cut.

Can you adjust the depth of cut easily? Only two of the routers—the Porter-Cable 309 and 310—change the depth of cut with a threaded ring like the ones on full-size Porter-Cable units. We found this relatively slow, but accurate.

To adjust the depth of cut on the Makita and Craftsman/Ryobi units, you simply slide the base up or down the motor housing and secure it with a thumb screw or wing nut. This method proved fast, but not as accurate as routers that incorporate a micro-adjust screw to fine-tune the depth of cut.

The micro-adjust group includes the Porter-Cable 7310, Bosch, DeWalt, and Hitachi. On all but the Hitachi, the micro-adjustment screw is located on the base as shown *above right*, but only the Porter-Cable provides a way to quickly adjust the base for a big change in depth. With the DeWalt and Bosch, you turn the screw to run all the way from the top to the bottom of the depth of travel—a time-consuming procedure.

With the Hitachi, the micro-adjuster consists of a stopscrew on the side of the motor housing. To adjust it quickly, you loosen the thumbscrew slightly. This allows the base to move freely up and down at the rate of .04" for each turn of the stopscrew. In our tests, we found that the adjustment tended to slip when the base was at either the top or the bottom of its travel, and the thumbscrew had to be precisely tensioned to keep the stopscrew engaged but still movable.

Are all depth-adjustment locks created equal? We rated the DeWalt and Craftsman/Ryobi only fair in this category because their locks were too small or narrow to get a good grip. The Craftsman/Ryobi locks consist of a wing nut; the DeWalt has a large-diameter, but thin, thumb nut. The Porter-Cable 309 and Makita locks were easier to grip, but required too many turns to operate them. Best in the test was the Hitachi, which uses a large, round, easy-to-grip knob.

How about ergonomics? For this hands-on appraisal, we evaluated how

Continued

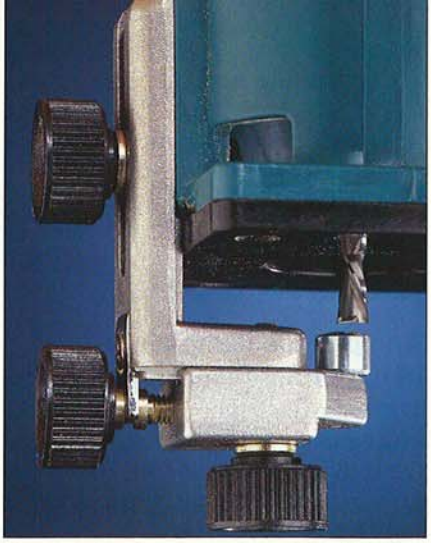
Trim Routers

easy it is to hold and control each machine. Along with housing size and shape, we also considered how many things, such as knobs, get in the way of a good grip. The Porter-Cable 7310, Bosch, and DeWalt must be gripped higher up on the motor housing than the others, making them more difficult to control.

Bases on the Craftsman/Ryobi, Makita, and Porter-Cable 309 and 310 clamp around the motor housing with a clamp screw that protrudes into the grip area. The Porter-Cable base is a little larger than the other three. The Makita and Craftsman/Ryobi have the smallest-diameter grips and can be grasped low for superior control. (We based our appraisal on a user with an average-size hand. If you have an especially large hand you may find the larger bases completely acceptable.)

The Hitachi's ergonomics differ from the other three because, instead of a round body, it has a squared-off oval shape. It grips well, but knobs can get in the way. You can grip it low, too, but its smaller base makes control a little more difficult.

How much power do I need? Here's another area where we found some real surprises. Three of the routers draw 5.6 amps, two draw 4, three draw 3.8, and one draws just 3.3. You would assume that units that draw more amps would be more powerful, but in our tests only two of the 5.6-amp routers—the Porter-Cable 7310 and the DeWalt—out-performed the other machines. Of the others, only three had power that we considered excellent, the 3.3-amp Makita and the 3.8-amp Craftsman/Ryobi. The latter showed almost no drop in speed when loaded heavily and simply bullied its way through cuts. All the others slowed when loaded, and we could feel the difference in the rate of cut. Of course, trimming laminate doesn't load motors to the extent that our ogee and straight bits did.



Some trimmers, such as this Makita, come with a roller-edge guide as standard equipment. Its bearing acts like the bearing on piloted router bits.

AT-A-GLANCE INFORMATION TO HELP YOU CHOOSE A TRIM ROUTER

BRAND	MODEL	MOTOR: AMPERAGE DRAW	MOTOR: NO-LOAD RPM	SPINDLE LOCK	DEPTH ADJUSTMENT RANGE (INCHES)	BASE OPENING (INCHES) WITH/WITHOUT SUB-BASE	LOWER BEARING HOUSING MATERIAL (1)	NOISE LEVEL (DECIBELS)	PERFORMANCE EVALUATION (2): MICRO-ADJUSTMENT MECHANISM	BIT CHANGING EASE	ERGONOMICS	DEPTH LOCK EASE	SUB-BASE CHANGING EASE	BIT VISIBILITY	OBSERVED POWER	OVERALL QUALITY	ACCESSORIES (3): STANDARD	OPTIONAL	CORD LENGTH (FEET) AND LOCATION (4)	WEIGHT (POUNDS)	COUNTRY OF ASSEMBLY (5)	APPROXIMATE SELLING PRICE
BOSCH	1608LX	5.6	30,000	NO	1/2	1 1/8 / 1 1/8	A	70	E	G	G	E	G	G	G	E	CB,REG, STB	OB,OS,SB, TB,TGB	6.5 S	3.3	U	$110
CRAFTSMAN	27512	3.8	23,000	NO	1 1/8	1 7/16 / 1 7/16	P	68	None	E	E	F	Not Possible	E	E	G	CB,SB	SEG	10 S	2.7	U	100
DeWALT	DW670	5.6	30,000	YES	7/8	1 3/16 / 1 5/8	A	70	G	F	G	F	G	F	E	E	REG,STB	OB,RB,SB, SSS,TB,TGB	9.5 T	3.7	I	105
HITACHI	TR6	4	30,000	NO	1 1/16	1 / 1	P	68	G	E	G	E	E	G	G	G	REG,STB	SEG	8 S	3.4	M	105
MAKITA	3700B	3.3	28,000	NO	1 5/8	1 3/8 / 1 3/8	P	68	None	E	E	G	E	E	E	G	REG,SB, TGB	CEG,SEG, TSB	8.5 S	3.4	B	130
PORTER-CABLE	309	3.8	28,000	NO	1	1 3/16 / 2 1/4	P	70	None	E	G	G	E	G	G	G	SB	TGB	6.5 T	3.3	U	110
	310	4	27,500	NO	7/8	1 3/16 / 2	A	70	F	E	G	E	E	G	G	E	RB	OB,TB,TGB	7 S	3.4	U	160
	7310	5.6	30,000	YES	1	1 3/16 / 1 3/8	A	72	E	G	G	E	G	G	E	E	STB	OB,REG, TB,TGB	10 S	3.4	U	105
RYOBI	TR-30	3.8	23,000	NO	1 1/8	1 7/16 / 1 7/16	P	68	None	E	E	F	Not Possible	E	E	G	CB,SB	REG,SEG	10 S	2.7	U	100

NOTES:

1. (A) Aluminum
   (P) Plastic
2. E Excellent
   G Good
   F Fair
3. (CB) Carbide bit
   (CEG) Combination edge guide
   (OB) Offset base
   (OS) Over-size sub-bases
   (RB) Round base
   (REG) Roller edge guide
   (SB) Seaming base
   (SEG) Straight edge guide
   (SSS) Solid surface skis
   (STB) Straight base
   (TB) Tilt Base
   (TGB) Template guide bushing
   (TSB) Trimmer shoe base
4. (S) Side of motor
   (T) Top of motor
5. (B) Brazil
   (I) Italy
   (M) Malaysia
   (U) United States

Where to call for more information:

Bosch	DeWalt	Makita	Ryobi
773/286-7330	800/433-9258	800/462-5482	800/525-2579
Craftsman	Hitachi	Porter-Cable	
Call or visit your local Sears store	800/706-7337	800/487-8665	

Could height make a difference? Shorter one-handed routers have a lower center of gravity, which makes it easier for them to maintain a bit at 90° to the surface. A taller router, such as the DeWalt, tends to be tippier. The shortest routers are the Porter-Cable 310, Craftsman/Ryobi, and the Makita; all proved stable in our hands-on tests.

Do cord location and length really matter? We found that cords that exit from the side of the housing are a bit more convenient because they don't drag across your hand. Cords that attach to the top of the housing, such as those on the DeWalt and the P-C 309, loop back down and can get in the way. Longer cords, such as the 10-footers on the P-C 7310 and the Craftsman/Ryobi trimmers let you work around larger projects with less liklihood of the cord hanging up on an edge or becoming accidentally unplugged.

Our recommendations

If you already own at least one full-size router and are looking for a simple, easy-to-use, basic tool at an affordable price, the Craftsman/Ryobi gets our thumbs up as a one-handed router. Though it doesn't have any bells and whistles, it sailed through our tests in high style, scoring well in power, ease of use, good grip, and ample cord length. Its low center of gravity made it the easiest to control, and the clear base provides excellent bit visibility.

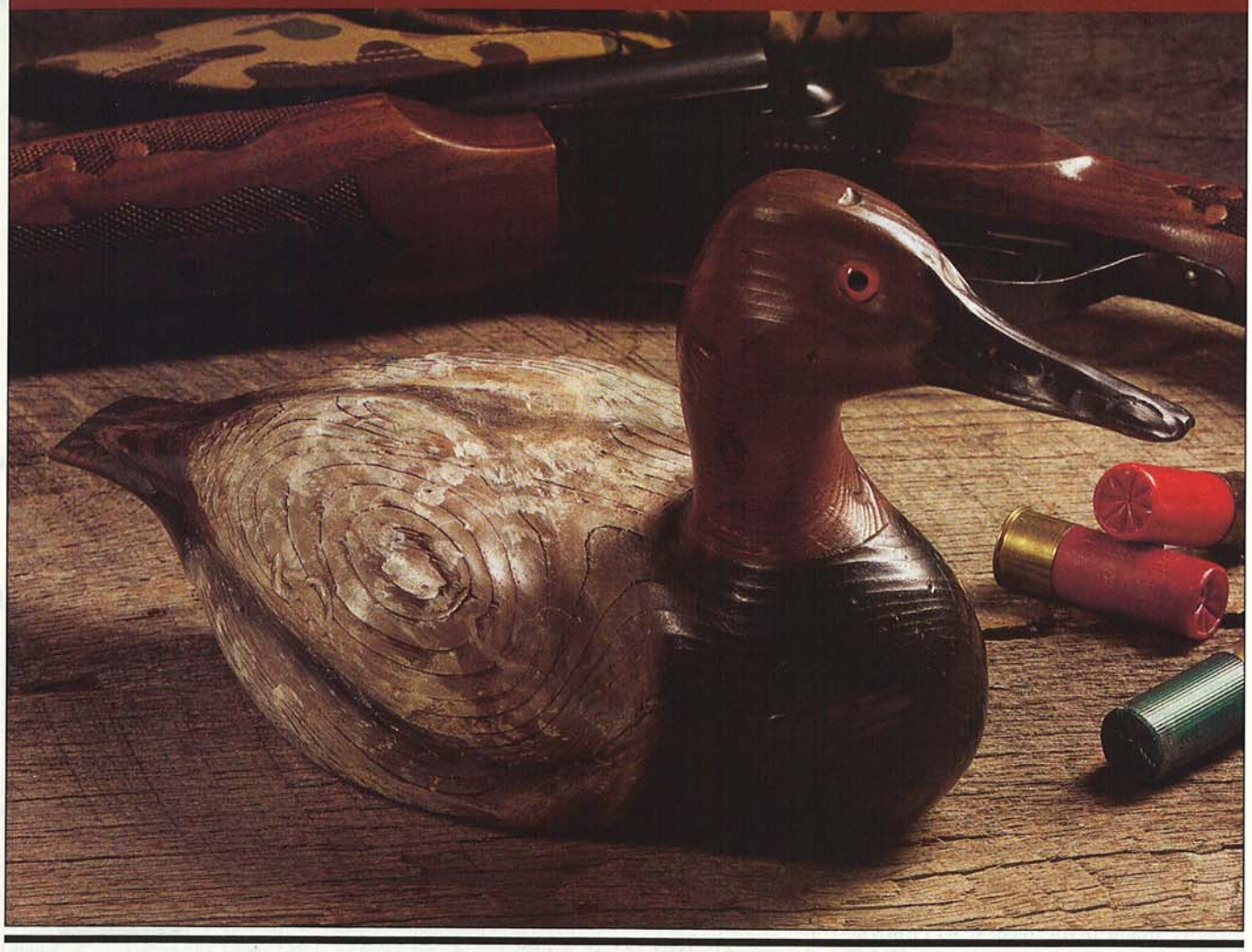
If you plan to use your trimmer a lot, want more features, and would prefer to avoid the split-arbor collet of the Crafts-man/Ryobi, the Makita might fit your needs to a tee. It boasts a nice grip, lots of adjustment travel, easy bit changing, good power, and good bit visibility. And it comes standard with a roller edge guide (see photo on the *opposite page*). But we had difficulty finding it in stock at local retailers, which may explain why it's priced on the high end.

The Porter-Cable model 309 is also a durable and compact performer. It's somewhat larger to grip and slightly harder to adjust than the Craftsman/Ryobi and Makita units.

Laminate Trimmers

Written by Jim Hufnagel Technical consultant: Dave Henderson Illustration: Kim Downing Photographs: Marty Baldwin

OLDEN-DAYS DECOY



While judging woodcarvings at the Iowa State Fair a few years ago, I was taken with an antique-style decoy like the canvasback shown *above*. Later, I contacted he carver, Clint Bingham of Chariton, Iowa. He readily agreed to share his techniques for making new carvings look old. Here's how to create your own brand-new old-time decoy.

Larry Johnston

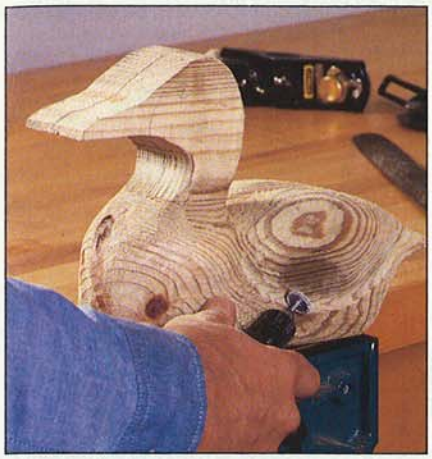
CARVE A DUCK THAT LOOKS LIKE A REAL ANTIQUE

1 Make a full-size top pattern for the duck body, using the half-pattern on page xx. Trace it and the side pattern for the duck body onto pine stock that measures 4×6×12". Transfer the head pattern to a 2½×4×6" piece. (You could laminate boards to make the blanks, but solid stock gives a better overall effect.)

"For the best look, don't use basswood or the other common carving hardwoods," Clint suggests. (Clint raises the grain as a part of his finishing techniques; this works best with softwood.) "Stick with pine, fir, or cedar. Old wood is really best—like beams from old barns and buildings," he adds. "Some of it already has holes and splits, which gives you a head start on the antique look." Rough pine, such as a chunk of landscape timber or pole-barn pole, works fine.

2 Bandsaw the body and head blanks. To cut out the body, first bandsaw the top view. Then tape the cut-off side pieces back onto the blank, and bandsaw along the side outline. Draw a centerline along the edge of the head blank and one along the body top.

3 Carve the body to rough shape, as shown *opposite page, top left*. You can shape the body using hand tools such as knives, chisels and gouges, a rasp, or a spokeshave. Or, as Clint does, you can power-carve the decoy. He accomplishes much of the rough-



Rough out the decoy with either hand tools or power-carving equipment. To hold the carving in a vise, temporarily screw a cleat to the decoy's bottom.

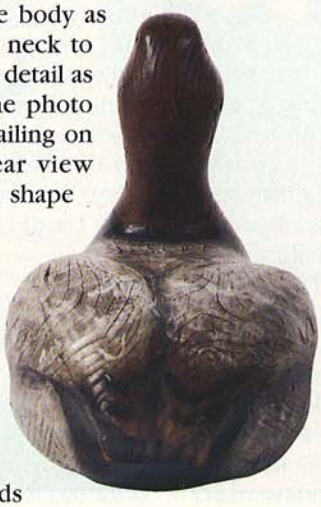
ing with a ¾" tapered Kutzall bit and a carbide sleeve for a 1" sanding drum. Other bits you may have, such as the wheel-type Kutzall bit shown in the photo, can do the job.

"I rough the body out quite a ways before I attach the head—it makes it a bit easier," Clint says. As you carve the decoy's body, maintain a flat surface on top of the neck stub to facilitate head attachment.

Keep an eye on the centerline as you shape the body to maintain side-to-side balance in the carving. But don't worry about achieving absolute symmetry; few living things are perfectly symmetrical.

4 Attach the head. To fasten it securely, drill a pilot hole through the center of the neck from the bottom of the body. Counterbore the hole on the bottom of the body. Glue and screw the head in place, lining up the head and body centerlines. Plug the counterbore with a length of dowel rod, and trim it off flush with the bottom of the body.

DETAILS MAKE YOUR DUCK COME ALIVE



Details can include nostrils and the line separating the upper and lower mandibles, if you want. The rear view shows the general shape of the body, neck, and head.

1 Fair the neck into the body as you carve the head and neck to shape. Carve in as much detail as you like in the bill. (The photo *far right* shows the detailing on Clint's carving. The rear view *right* shows the general shape of the head.)

The amount of detail in old decoys varies widely, and often was determined by the carving style that was popular in a particular region at a given time. "I carve my antique-type, rustic-looking birds in the style I remember from the 1940s and 1950s," Clint says. "They aren't like the primitive styles from a century ago that had long, slim bodies with little wing definition."

The maker's skill and preferences also play a big role in setting the level of realism. "I put a little more detail into mine—the bill and glass eyes—because I like to. But you could just rough out the bill and forget the nostrils and other details," Clint says.

A decoy needs to look like a duck and capture the sense of the particular species, but absolute realism isn't necessary. "The shape of the head is the most important factor," Clint says.

2 If you do want to install glass eyes, drill holes for 9-mm red eyes after you finish carving the head. Carefully align the eye holes across the head in both front and top views.

3 Sand the completed carving with a pneumatic sander or cushioned drum. (You could leave tool marks for an even more rustic look.) Don't sand away any details.

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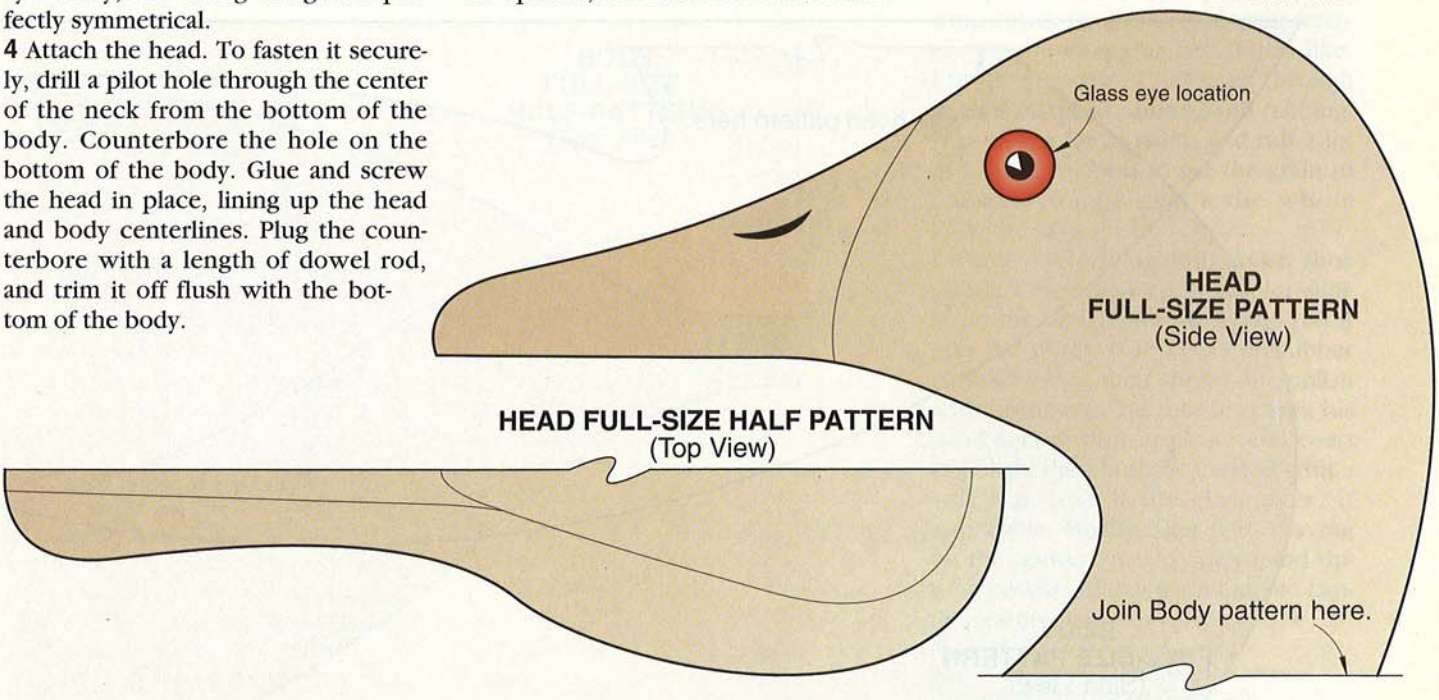
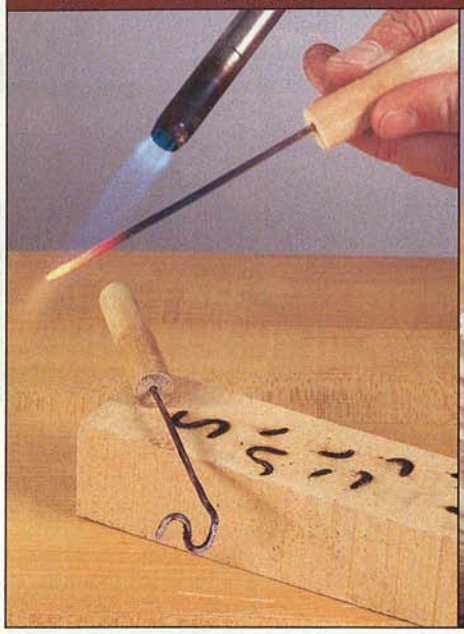
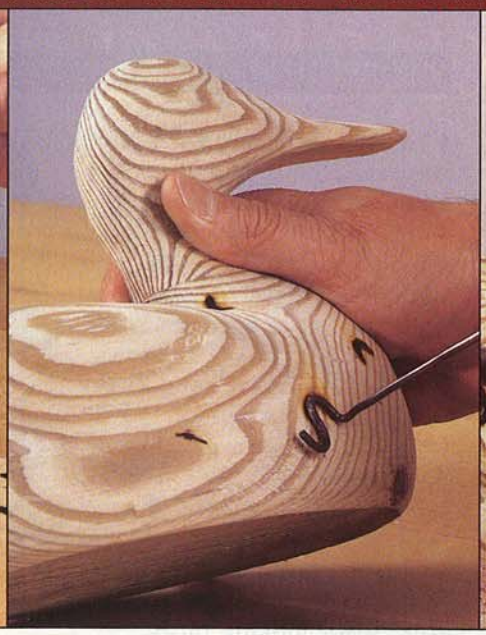
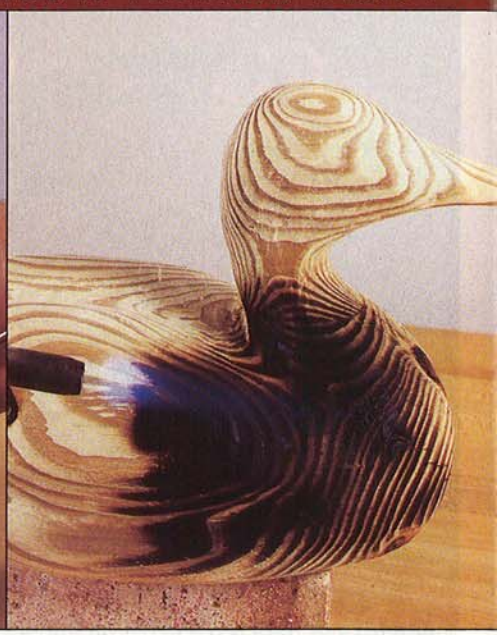




To burn surface scars, form tools like these from copper electrical wire. Heat the tools with a propane torch.



Scars burned into the decoy won't stand out so boldly after finishing. Add just enough marks for character.



Scorch the decoy all over with a propane torch. Keep the flame moving for even charring.

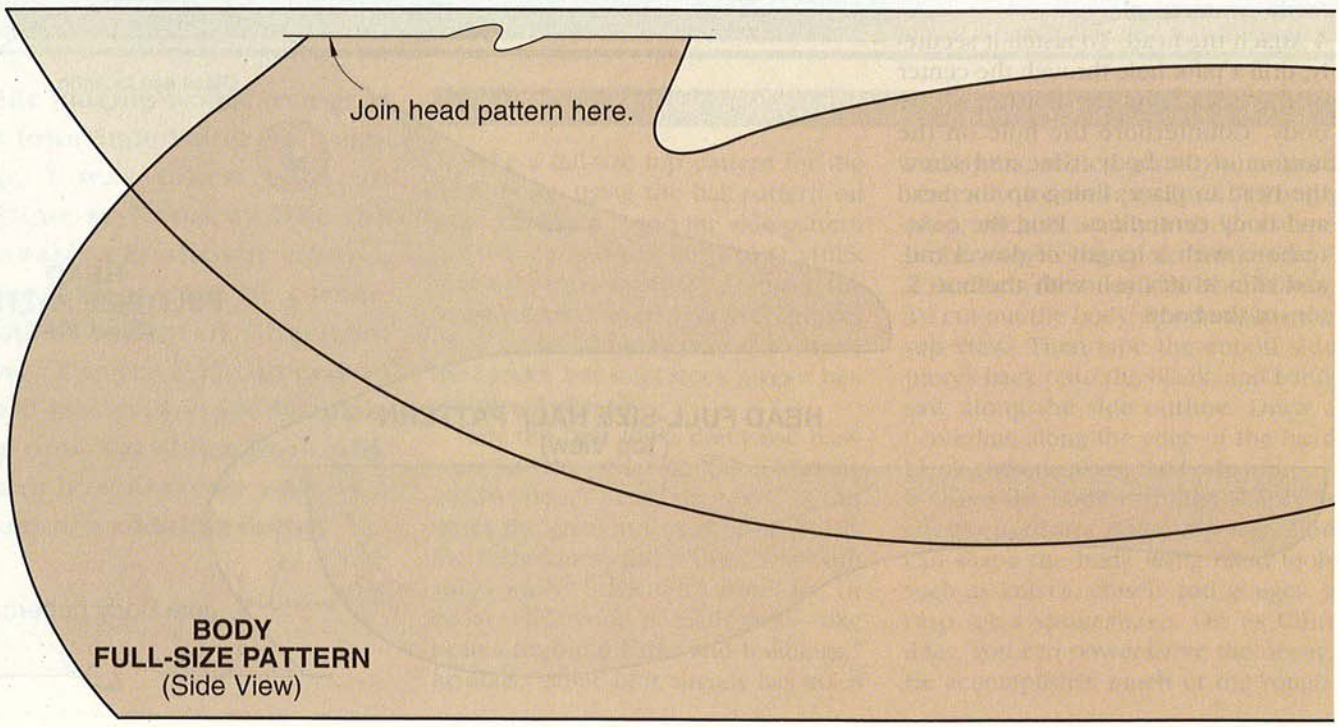
1 Begin antiquing your carving by burning scars into the surface.

To make the burning tools (shown *above*), cut two 8" lengths of 10-gauge solid copper wire. (We used electrical wire, available from home centers.) Bend the end of one piece to an S about 1" tall, then bend the wire 90 degrees at the top of the S. File or sand a point on one end of the other.

Make a handle for each one by drilling a 7/64" hole in one end of a 3-4" length of ½" dowel rod. Push the plain end of the wire into the hole. (Hammer the end of the wire against an anvil to flatten it slightly if it doesn't fit snugly into the hole.)

2 Heat the tool tip with a propane torch, then burn random marks on the body and head, as shown *above*. Press different areas of the tool against the carving to make different shapes, shown on the sample block with the tools. Burn holes straight in and at different angles with the pointed tool. Don't overdo the burning, though; a few marks and holes on each side will be plenty.

3 Distress the surface. You can inflict dents with various blunt instru-



Where two paint colors meet, blend them together by loading one color on each edge of the brush.

ments—a hammer, a piece of angle iron, chain—to give the look of a roughly handled working decoy. To simulate the effects of stray shot, round-over the point of an 8d or 16d nail, and pockmark the carving with it. Other aging touches could include breaking off a corner of the tail or the bill. You can inflict some aging after painting the carving, too.

Now, roast your duck

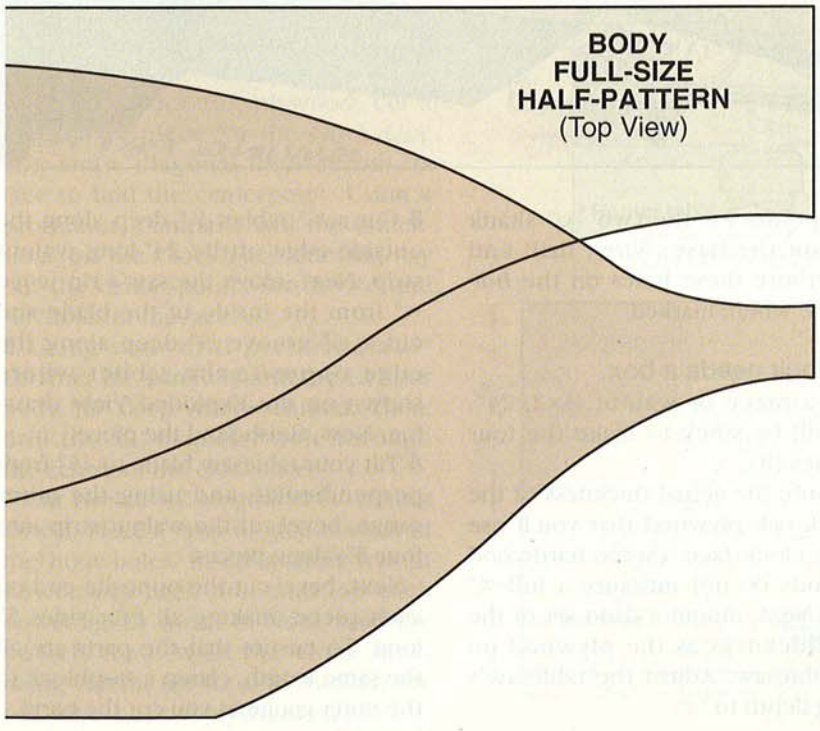
1 Burn the duck overall with a propane torch, as shown *opposite page, top right*, to raise the grain and darken the wood. Clint plays the flame from the torch over the entire surface. "Watch what you're doing, because you can get burned," Clint warns. "I like to set the bird up on something nonflammable, then I don't have to hold on to it.

"Use some judgment—if you burn too much along the edge of the bill or tail, you can lose detail, and might ruin the edge," Clint says. "When the heat hits the end grain, it can cause the wood to crack. But, that's good—it adds to that old look," he says.

2 After burning, brush or scrub away the charred wood, leaving darkened, raised grain. A stiff brush or a coarse nylon abrasive pad will clean off the charred wood .

Put on paint and polish to complete the antique look

1 Paint the duck with acrylic paints. Colors for the carving shown are titanium white and mars black, with burnt siena for the head. Darken the white paint for the top of the tail feathers by adding a bit of burnt umber to it.



Don't prime the carving before painting it. "Brush the paint on right over the charred wood," Clint advises. You'll need to put on several coats to cover the duck initially. He recommends painting with a #8 or #10 filbert brush. Start with the white body; then paint the black breast and burnt siena head.

Where two colors meet, blend them by double-loading the brush. To do this, add a bit of retarder to the paints to slow drying. Then, dip one edge of the brush in the first color and the other edge in the second. Pull the middle of the brush along the division line, as shown *left*. Going over the line with a clean brush wetted with clean water can also help blend the two colors together.

Don't worry about following the same line precisely on subsequent paint coats; a slight mismatch where the colors meet helps blend them. Do be careful to keep the colors on the same side of the line, however.

2 Let the paint dry, then rub the decoy with a nylon abrasive pad or steel wool to expose the grain. Rub long enough and hard enough to remove much of the paint on the raised grain, leaving color between the raised grain lines.

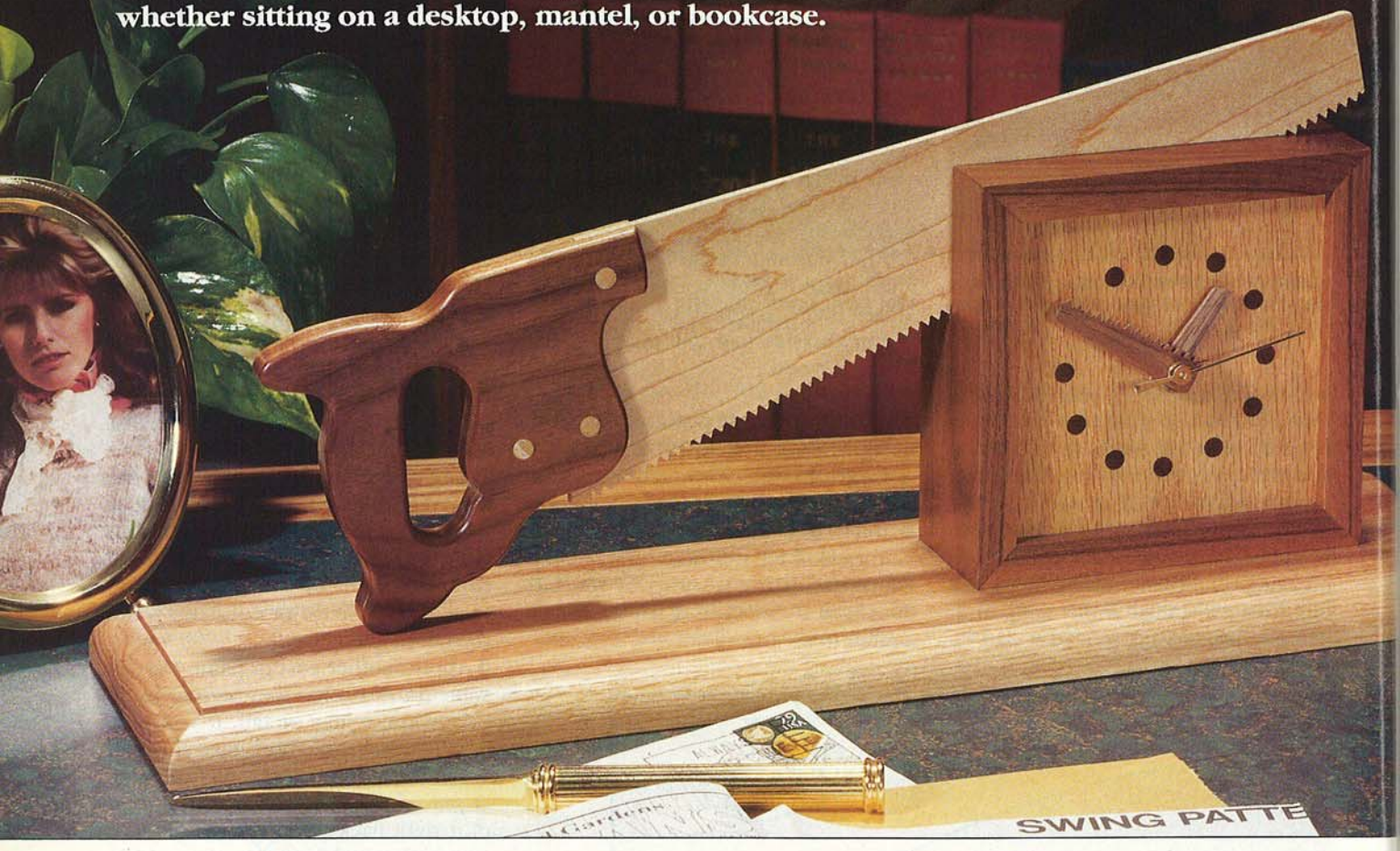
3 Apply another coat of paint. Dab on some brush strokes to represent feathers on the wings or tail, if you like. Rub it out again. Clint goes through several stages of painting and rubbing. "I put on a lot of paint, and rub a lot of it right back off to get the grain to come through—that's the whole idea," he says.

4 Finish the carving with cream shoe polish. Generously apply a color similar to the underlying paint, and rub it into the pores. (Clint puts on rubber gloves for this, then applies the polish with his fingers. He rubs it in until his hand gets warm.) Apply several coats of polish; then buff the carving with a soft rag. Install the glass eyes, if applicable. Finally, sign your carving on the bottom. If you don't mind tipping people off that it isn't an old family treasure, you can date it, too.

Project Design: Clinton Bingham
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Hetherington Photography

Cutting-time-in-half SHELF CLOCK

This oak and walnut clock will instantly give away your favorite hobby. And it will grab everyone's attention whether sitting on a desktop, mantel, or bookcase.



Start by building the clock base first

Note: *You'll need some thin stock for this project. Either resaw or plane thicker material to size.*

1 From ¾"-thick stock (we used oak), rip and crosscut one piece to 4½x16¾" for the base (A).

2 Set up your router as shown on the Router detail accompanying the Exploded View drawing. Rout a bead around the *top* edge of the base. Then, finish-sand the base, using 150-grit, 180-grit, and finishing with 220-grit sandpaper.

3 Using the dimensions on the Exploded View drawing, locate the centerpoints for the two 5/32" shank holes on the base. Now, drill and counterbore these holes on the *bottom* side where marked.

The clock needs a box

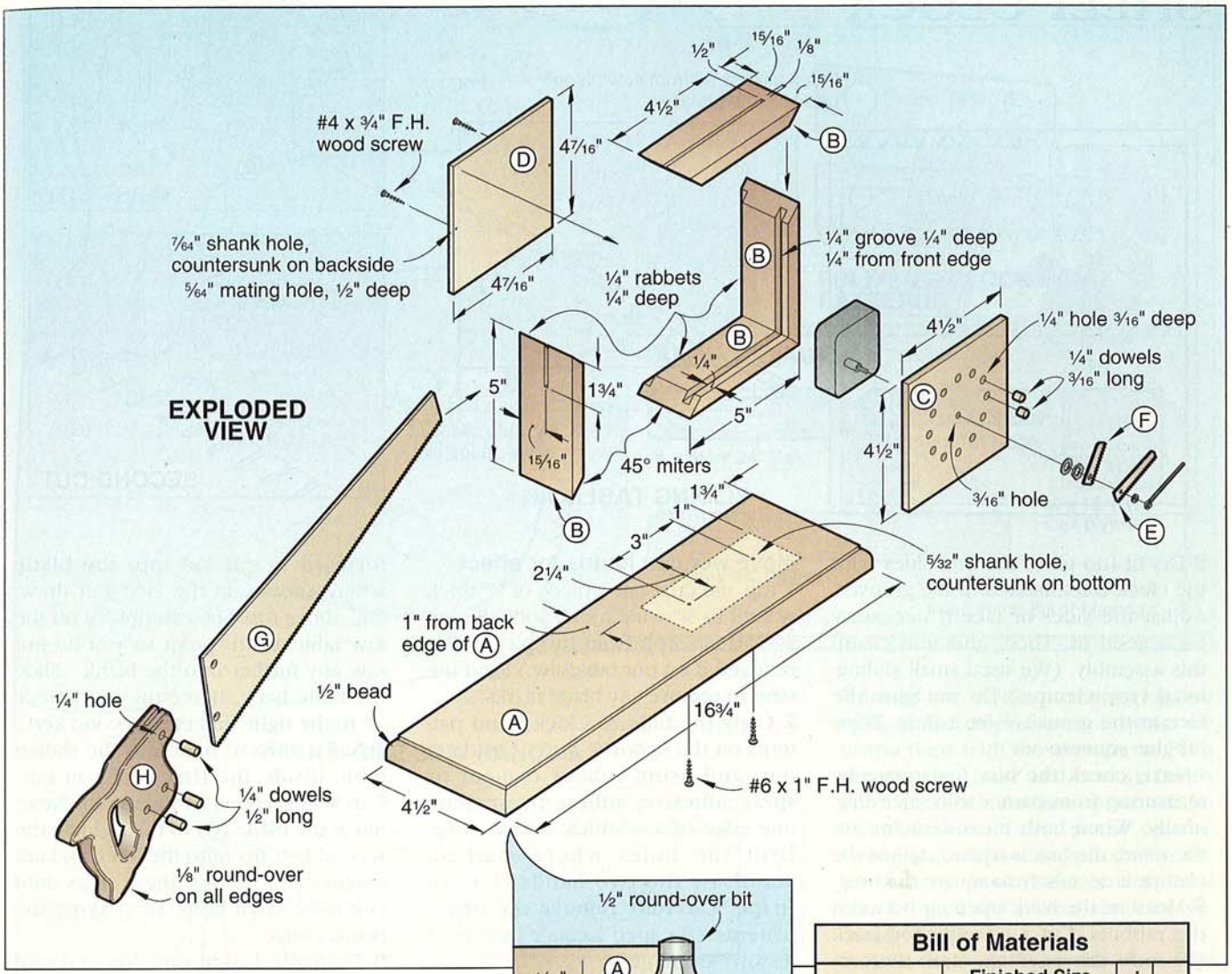
1 Cut a piece of walnut ½×2×24". This will be stock to make the four box sides (B).

2 Measure the actual thickness of the ¼"-thick oak plywood that you'll use for the clock face. (Some hardwood plywoods do not measure a full ¼" thick.) Next, mount a dado set of the same thickness as the plywood on your tablesaw. Adjust the tablesaw's cutting depth to ¼".

3 Cut a ¼" rabbet ¼" deep along the outside edge of the 24"-long walnut strip. Next, move the saw's rip fence ¼" from the inside of the blade and cut a ¼" groove ¼" deep along the edge *opposite* the rabbet where shown on the Exploded View drawing. Now, finish-sand the piece.

4 Tilt your tablesaw blade to 45° from perpendicular, and using the miter gauge, bevel-cut the walnut strip into four 5⅞"-long pieces.

Next, bevel-cut the opposite end on each piece, making all four sides 5" long. To ensure that the parts are all the same length, clamp a stopblock to the miter gauge as you cut the parts.



5 From ¼"-thick oak plywood, cut a 4½"-square piece for the clock face (C). Draw diagonal lines across its face to find the centerpoint. Using a protractor, compass, and the dimensions on the Clock Face drawing, lay out the center-points for the ¼" and 3/16" holes in the face.

6 Using your drill press and a ¼" Forstner bit, carefully drill the 12 hour holes 3/16" deep where marked. Then, drill the 3/16"-diameter hole through the center of the clock face.

7 Cut twelve 3/16" lengths of ¼" walnut dowel. Place a drop of glue in each of the hour holes. Insert a short walnut dowel into each hole and tap each dowel lightly to set it. Now, sand the dowels flush with the clock face, being careful not to sand through the oak veneer of the plywood face.

Continued

Bill of Materials

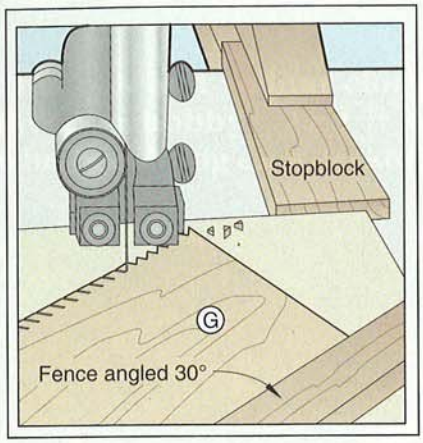
Part	Finished Size T	W	L	Matl.	Qty.
A base	¾"	4½"	16¾"	O	1
B* box sides	½"	2"	5"	W	4
C clock face	¼"	4½"	4½"	OP	1
D* back	¼"	4 7/16"	4 7/16"	OP	1
E* hand	⅛"	½"	2⅛"	W	1
F* hand	⅛"	½"	4 7/16"	W	1
G* blade	⅛"	3⅛"	11"	M	1
H* handle	½"	3¾"	4¾"	W	1

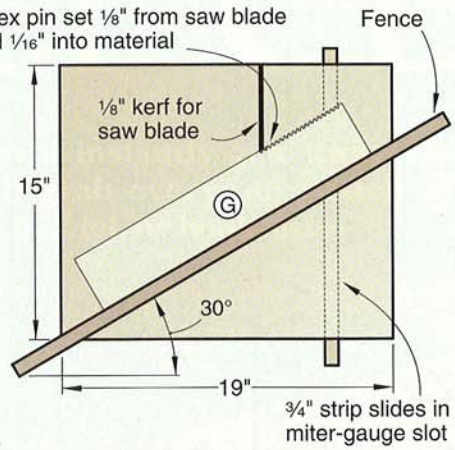
*Cut part marked with an * oversize in width. Trim to finished size according to the how-to instructions.

Materials Key: O-oak; W-walnut; OP-oak plywood; M-maple.

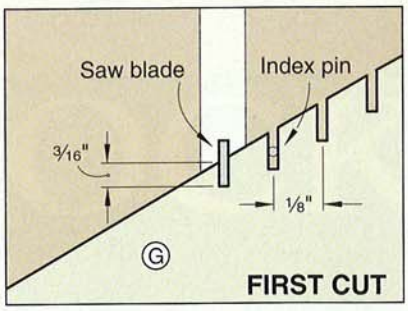
Supplies: ¼" walnut dowel, ¼" birch dowel, 2-#6x¾" flathead screws, 2-#6x1" flathead wood screws, finish, clock movement.

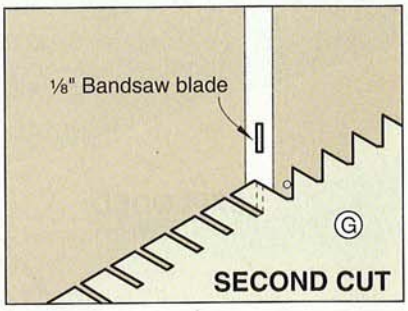
SHELF CLOCK





SLIDING TABLE JIG





8 Dry-fit (no glue) the box sides with the clock face inserted in the grooves. Adjust the sides or face if necessary for a good fit. Then, glue and clamp this assembly. (We used small sliding-head type clamps.) Do not glue the face in the grooves—let it float. Wipe off glue squeeze-out.

Next, check the box for square by measuring from corner to corner diagonally. When both measurements are the same, the box is square. Adjust the clamps if necessary to square the box.

9 Measure the back opening between the rabbets. Cut a ¼" plywood back (D) to fit this opening. Mark the centerpoints for two screw holes on the back where shown, and drill the shank holes. After the glue dries, remove the clamps from the box, and finish-sand the joints.

10 To cut the 4½"-long kerf in the top of the clock box to accept the handsaw blade, first raise your tablesaw blade to cut 1¾" deep. Next, set the fence 15/16" from the side of the blade. Now, measure back along the saw table ½" from the front edge of the saw blade, and scribe a stopline on the table's surface at that point.

11 Place the clock box on one of its sides, one edge against the fence. Turn on the tablesaw, and slowly push the box across the blade until the box's back edge aligns with the stopline you scribed on the table top. Stop sawing, shut off the saw, and remove the box.

Move wooden hands for effect

1 Rip and crosscut a piece of ½"-thick walnut to ¾" wide by 12" long. Resaw a ⅛"-thick strip from the piece. (We resawed it on our tablesaw.) Sand the strip to remove any blade marks.

2 Copy the full-size Clock Hand patterns on the *opposite page*. Cut them out, and using rubber cement or spray adhesive, adhere them along one edge of a ⅛"-thick walnut strip. Drill the holes where marked. Scrollsaw the two hands (E,F) to shape. Carefully remove the paper patterns. (We used lacquer thinner to dissolve the adhesive.)

Prepare the handsaw

1 For the blade (G), rip and crosscut a piece of maple to ⅛×4×13"

2 To form the saw teeth along one edge of the blade blank, first construct the sliding table for your bandsaw shown in the Sliding Table Jig drawing. Make the jig from ½"- or ¾"-thick plywood. Cut a wood guide strip to fit the slot in your bandsaw table, and attach this strip to the underside of the sliding table. Then, place the jig on top of your bandsaw table with the guide strip in the miter-gauge slot.

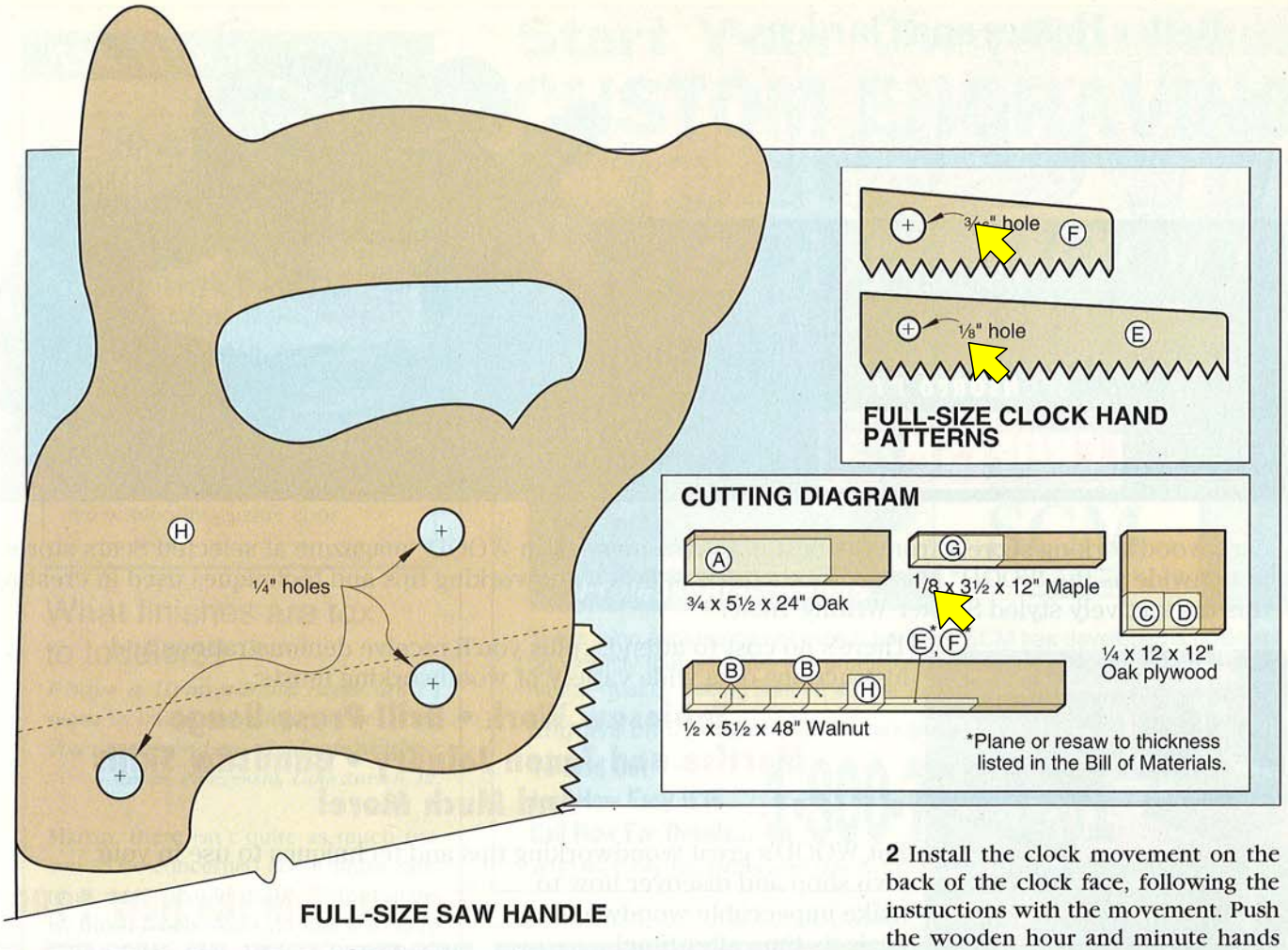
3 Attach a wooden fence to the sliding table, angled 30° to the bandsaw blade. Position the ⅛"-thick blade blank (G) against the fence, align the right corner of the board with the saw blade, and push the sliding table forward to cut 3/16" into the blade where shown on the First Cut drawing, *above top*. Set a stopblock on the saw table at this point so you do not saw any further into the blank. Slide the table back, move the workpiece ⅛" to the right, and cut a second kerf.

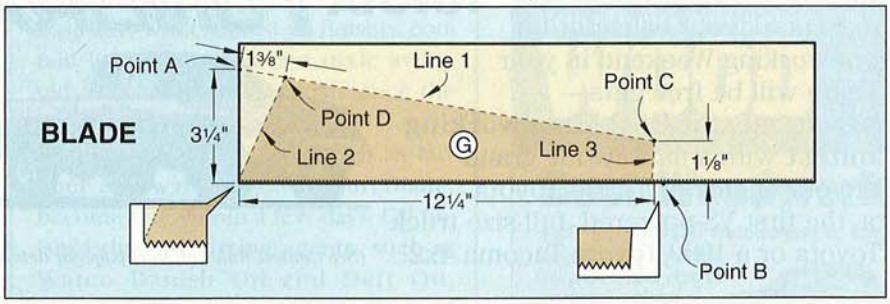
4 Nail a #18×¾" brad into the sliding table inside the first kerf you cut. This will serve as an index pin. Next, move the blade (G) to the right so the second kerf fits onto the brad, and cut another kerf. Repeat these steps until you have sawn kerfs 12½" along the board's edge.

5 Turn the board end for end and repeat these steps as shown on the Second Cut drawing *above* to finish forming the V-shaped sawteeth.

6 Lay out the saw blade (G), referring to the dimensions on the Blade drawing, *opposite page*. To do this, locate the point of the first full tooth at the left end of the blade. Measure up 3¼" and mark point A. Measure 12¼" to the right along the toothed edge, and mark point B. From point B, measure up 1⅛", and mark point C. Next, draw a line (line 1) connecting point A and point C. Measure 1⅜" from point A along the line, and mark point D. Draw line 2 and line 3 where shown. Note that line 3 would be perpendicular (90°) to the first line, except that we directed it to the center on a tooth point.

7 Cut the saw blade to shape, sawing along lines 1, 2, and 3 in order. (We





made the cuts on our bandsaw.) Sand or plane the sawn edges smooth.

8 Saw a piece of ½"-thick walnut to 5¼" square. Then, adjust your tablesaw blade to cut 1" deep, and position the fence 3⁄16" from the blade. Stand the square piece on end (with the end grain on the saw table) and against the fence. Cut a ⅛"-wide kerf along that end.

9 Photocopy the full-size Saw Handle pattern *above*, and adhere it to the face of the walnut square, aligning the front edge of the pattern with the kerfed end of the blank. Scrollsaw the handle (H) to shape. Insert the blade in the handle slot, align, and drill the ¼"-diameter holes through the handle.

10 Remove the paper pattern from the handle. Rout a ⅛" round-over along all edges of the handle. Cut three ½" lengths of ¼" birch dowel. Again, insert the blade into the handle slot, align the holes, and glue a plug in each hole. Sand the plug ends flush with both surfaces of the handle. Sand the top edge of the saw blade flush with the handle.

Now, apply the finishing touches

1 Apply finish to all of the parts. (We applied a coat of sanding sealer and sprayed on two coats of semigloss clear lacquer, sanding with 320-grit sandpaper between lacquer coats to level the finish surface.)

2 Install the clock movement on the back of the clock face, following the instructions with the movement. Push the wooden hour and minute hands onto the clock shafts in place of the metal hands. Next, press on the sweep second hand supplied with the movement. Install the battery and check operation of the clock movement. Set the time.

3 Place the back (D) in the clock box rabbet, and drill through the existing shank holes to make the pilot holes in the sides. Drive two #4x¾" flathead wood screws to secure the back.

4 Position the clock box on the base where shown on the Exploded View drawing. Clamp it in place. Drill the pilot holes into the box, and drive a #6x1" flathead wood screw into each hole. Remove the clamps. Stand the clock upright, and position the wooden handsaw in the kerf, as shown in the photograph.

Buying Guide

Clock Kit. Mini-quartz clock movement with sweep second hand, catalog no. 7710, $6.50 ppd. in U.S. Canadian orders, call for shipping price. Order from Turncraft Clocks, P.O. Box 100W, Mound, MN 55364-0100, or call 800/544-1711.

Project Design: Ralph Peterman Illustrtations: Roxanne LeMoine; Carson Ode; Lorna Johnson Photograph: John Hetherington

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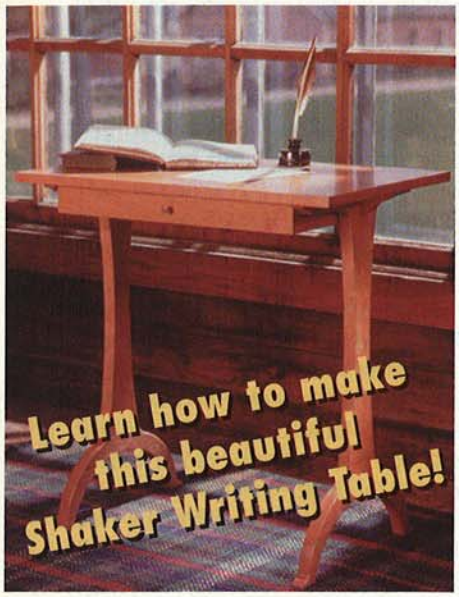

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What finishes are tox to toddlers?

I have a 10-month-old niece, and I want to make some toys for her. Can you recommend any child-safe finishes?

—Martin Palczynski, Lake Zurich, Ill.

Martin, there isn't quite as much reason to be concerned about finish safety as most people think. Unfortunately, finish labels don't do much to help you answer the safety question. Basically, while almost all finishes contain ingredients that are toxic as liquids, the toxicity disappears once the finish cures completely.

Quick-drying finishes, such as lacquer and water-based polyurethane, become safe within a few days. Oil finishes that use drying agents, such as Watco Danish Oil and Deft Oil, become safe after curing for at least 30 days. However, you should exercise caution with nondrying oils, such as pure tung oil or linseed oil. Without a drying agent, these finishes remain toxic indefinitely.

Continued on page 88

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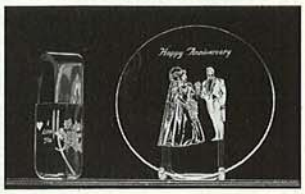

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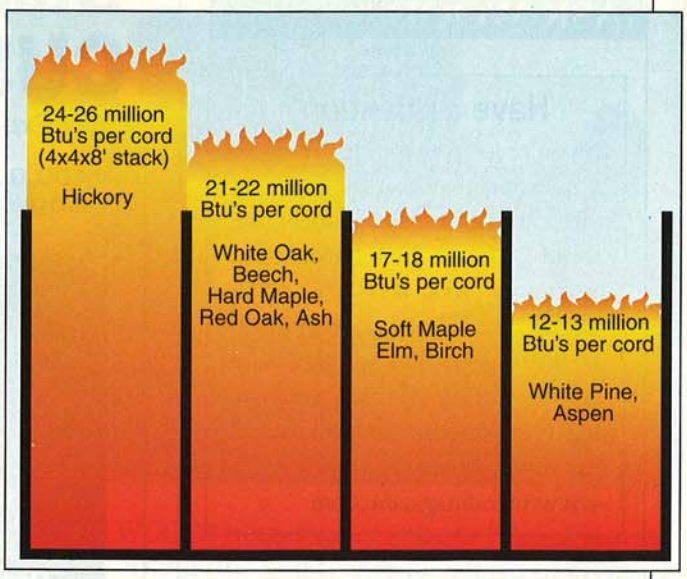
1. No purchase necessary to enter or win.
2. Entries must be more than 30 words and less than 100.
3. Write your best original woodworking shop tip on a 3"x5" card and bring it with you to the WOOD Woodworking Weekend Demonstration, or send it to: Woodworking Tips, 333 North Michigan Avenue, Suite 1101, Chicago, IL 60601. Entries must be received by June 30, 1999. Contest begins February 2, 1999. All entries become the property of sponsors.
4. Must be 18 and a U.S. resident to enter.
5. Entries will be judged by the editors of WOOD Magazine on clarity, usefulness, practicality and originality—with one national winner determined by July 15, 1999. Decisions of judges are final.
6. Entry constitutes permission to use entrant's name and tip, hometown and picture for promotional advertising and editorial purposes, unless prohibited by law. Employees and immediate family members of Meredith Corporation and co-sponsors, their affiliates and subsidiaries are ineligible. Maximum of one entry per person.
7. Winner will be selected and notified by mail on or about July 15, 1999. Winner will pick prize from local dealership determined by Toyota. Delivery of prize depends upon availability of color selected by winner. For the name of the winner, send a separate, self-addressed, stamped envelope after August 15, 1999 to Tip Contest, 333 North Michigan Avenue, Suite 1101, Chicago, IL 60601.
8. Winner is responsible for applicable taxes, license, insurance, registration fees. No prize substitution or transfer or cash in lieu of prize, except at discretion of sponsors. Subject to U.S. federal, state and local laws and regulations. Void where prohibited.
9. The awarding of prize is contingent upon full compliance with these rules.
10. Grand Prize: your choice of the NEW 1999 Toyota Tundra, the first V8-powered, full-size truck from Toyota (retail value not yet determined); or a 1999 Toyota Tacoma 4x2 (approximate retail value $19,000).
11. Winner will be required to sign an Affidavit of Eligibility and Release of Liability within 10 days of notification or an alternate winner may be selected. By participating and winning a prize, winner releases Meredith Corporation, Toyota, and Sears, their parents, affiliates, subsidiaries and agencies and their respective directors, officers, employees, and agents from any and all liability with respect to the prize.
12. This contest offered nationally.

Continued from page 87

Firewood heats more than the home

I've been looking into buying a wood burning stove for my woodworking shop. I cut and mill my own lumber, and it seems to me that the leftovers would serve better in a woodstove than rotting on the ground. What trees make the best firewood?

—Jon Wise, Greeley, Colo.


24-26 million Btu's per cord (4x4x8' stack)
Hickory
21-22 million Btu's per cord
White Oak, Beech, Hard Maple, Red Oak, Ash
17-18 million Btu's per cord
Soft Maple Elm, Birch
12-13 million Btu's per cord
White Pine, Aspen

As a rule, Jon, the more dense the wood, the slower and hotter it will burn. So hardwoods perform much better in the fire than softwoods.

Common hardwoods that are good in a stove include hickory, oak, beech, hard maple, and ash. Softwoods, such as pine and aspen, make excellent kindling, but don't give off nearly as much heat as hardwoods. Softwoods also contribute to creosote build-up (tar and oil that accumulates in the chimney), which improperly cared for can result in dangerous chimney fires.

You also should factor in moisture content before lighting. It takes 1,000 Btu's to evaporate one pound of water. A ton of wood at 60 percent moisture content has 750 pounds of water! That's a lot of wasted heat. So, let that firewood air dry to about 20 percent moisture content—then there's only 335 pounds of water to burn off. The difference between a ton of green vs. air-dried wood, in your stove, is 8 million Btu's vs. 11.5 million Btu's.

*(*Btu stands for British thermal unit. One Btu equals the amount of heat needed to raise the temperature of one pound of water, one degree Fahrenheit.)*

Those of us who cut firewood know that it heats our bodies more often than just when it's burning in the woodstove. It also warms us while cutting, splitting, loading, and stacking it.

Continued on page 90

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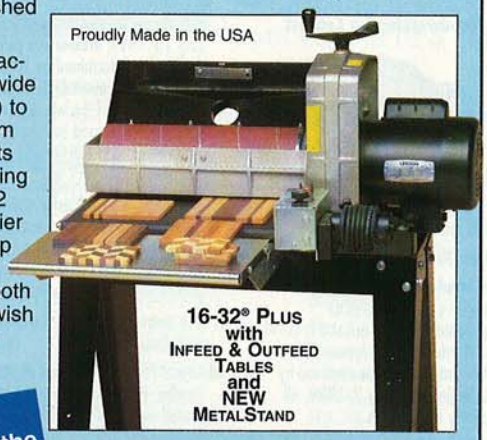

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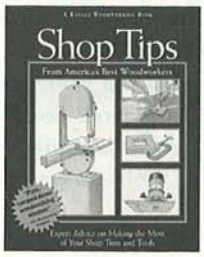

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12"X30TX1"	$162	$119	$107	$ 95
10"X40TX1/8" or 3/32"	$156	$119	$107	$ 95
30T 1/8" or 3/32"	$135	$ 99	$ 89	$ 79
9"X40T	$146	$109	$ 98	$ 87
30T	$125	$ 99	$ 89	$ 79
*8-1/4"X40TX 3/32"	$136	$ 99	$ 89	$ 79
8"X40T 3/32"	$136	$ 99	$ 89	$ 79
30T	$115	$ 89	$ 80	$ 71
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**6"x40T 3/32"	$136	$ 89	$ 80	$ 71

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Hitachi 8-1/2"x60Tx5/8"	$179	$119
DeWalt 8-1/2" & Ryobi 8-1/2"x60Tx5/8"	$179	$119
Delta 9"x80Tx5/8"	$204	$129
Ryobi–Makita & all 10"x80Tx5/8"	$207	$139
DeWalt, Makita, B&D, Hitachi 12"x80Tx1"	$229	$149
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For good general purpose cuts use Woodworker II 30T & 40T or Woodworker I. Use small stiffener where possible.

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8-1/4"X60T	$150	$109
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7-1/4"X60T	$150	$109

OTHER SIZES AVAILABLE – 7 1/4" – 14"

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7-1/4" x 60T x 3/32" K	$149	$129	300mm x 100T x 1/8" x 30mm	---	$197
8" x 80T x 1/8" & 3/32" K	$202	$169	12" x 100T x 1-1/8"K	$253	$215
220mm x 80T x 1/8" x 30mm	---	$167	14" x 80T x 1"	$232	$197
9" x 80T x 1/8" & 3/32" K	$207	$179	14" x 100T x 1"	$266	$226
10" x 80T x 1/8" & 3/32" K	$207	$159	16" x 80T x 1"	$262	$223
12" x 80T x 1-1/8"K	$212	$181	16" x 100T x 1"	$294	$243

Above is more standard.

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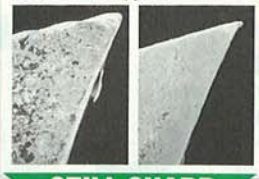

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(Bore up to 1-1/4" Add $25 — Plus $5.50 S&H)

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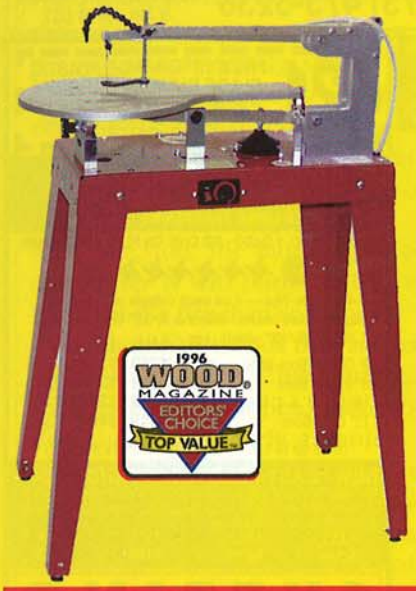

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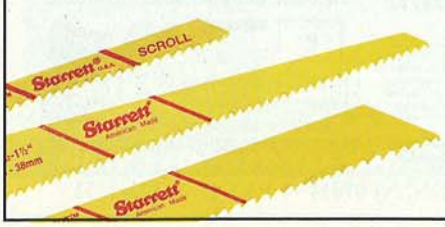

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ASK WOOD

Continued from page 88

Some points on finger joints

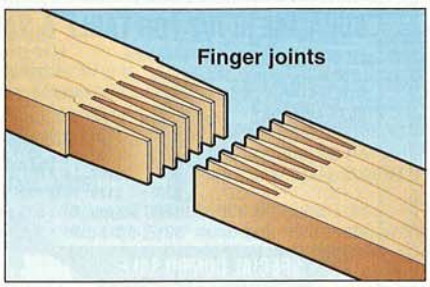
I was watching a show dedicated to router techniques. The host was demonstrating how to make "box" joints and distinguished these from "finger" joints. He indicated finger joints were somewhat tapered. I have always used "box" and "finger" to describe the same joint. Is this correct?

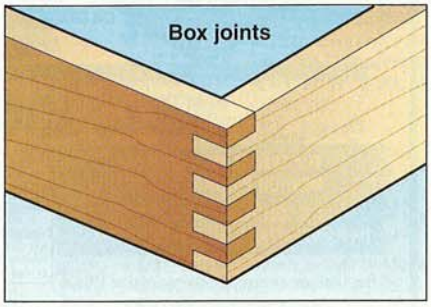
—Larry J. Fuchs, Milford, Ohio

Well, Larry, the answer is yes—and no. The terms "box joint" and "finger joint" do mean the same thing when they describe a joint made at the corners. Before cardboard, wooden box manufacturers used them because they were strong and easy to make. Today, woodworkers find them both practical and decorative.

In corner joints, you do not taper the individual "fingers." Typically, you cut them as wide as the thickness of the stock, uniform in width across their length.

However, the term "finger joint" also describes an end-to-end-grain joint—the kind found in window frames and other trim stock milled for a painted finish. In this application, the interlocking "fingers" taper parallel with the grain direction to approximate the tensile strength of solid wood. Doing this allows manufacturers to make greater use of short pieces of stock.





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"In my tests of this system, I found it no more difficult than routing any pattern with a bearing- or bushing-guided bit. What really impressed me is that it took just 6 to 7 minutes to complete the pattern. . ."
. . . Dave Henderson, WOOD® Magazine

American Woodworker

"With a plunge router and (the) new Router Carver System, you can create intricate, repeatable carvings on doors, panels, drawers or any flat wooden surface."
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Popular Woodworking

". . . thanks to an exciting new product called 3D Router Carver, anyone with a plunge router can produce handsome results in far less time than would be required using chisels to carve by hand."
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With Jesada's 3D Router Carver™ System

What is the 3D Router Carver™ System?

The 3D Router Carver System is a unique patented method of producing intricate carvings quickly, economically and with complete repeatability. With the Carver Bit, Carver Templates and your 1/2" collet plunge router you can carve any flat wooden surface with designs that rival the work of a professional carver. In fact, the 3D Carver System's speed, accuracy and economy make it attractive to the professional or the serious amateur. Besides your router, the system requires three key elements:

1) The 3D Carver Bit: A 1/2" shank, carbide tipped V-Groove Bit is enclosed in a 45º guide bushing. A threaded shaft within the bit's shank allows precise depth adjustment of the tip of the V-Groove bit.

Bit Specifications: Shank: 1/2" Cut diam.: 3/4" Cut Angle: 45º Cut depth: 5/8" Guide bushing diam.: 1-7/8"

2) Template Holding Frames: Clamped or tacked to your workpiece, these frames hold the 3D Templates securely in place.

3) Carver Templates: A total of over 50 templates produce a host of designs for cabinet doors, panel doors, door rails and corners, drawer fronts and many other applications. Can you make your own templates? You'll find it pretty difficult unless you are a skilled patternmaker. Our templates feature intricate designs cut on computer-controlled machinery with precision that's difficult to match in the shop.

How does the system work?

Using the 3D Carver is easy. The bit is installed in the router (1/2" collet only) with the plunge mechanism unlocked so that the router can move up and down as you rout. The 45º bushing follows the slots in the template. As the slot gets wider, the router moves downward, so the v-groove gets wider. As the slot narrows, the router moves up and the groove gets narrower. That's it!

How do I get started? With our Starter Set!

Classical Door.
Carving size: 17-3/4"x 7-1/4", approx. carving time: 5 min.

Classical Drawer.
Carving size: 8-1/4" x 2-3/4", approx. carving time: 4 min.

This popular kit includes everything you need to get started with the 3D Router Carver. It includes the templates and holding frames to make the Classical Cabinet Door and Drawer designs shown above, plus a 3D Router Carver™ Bit, complete instructions & the 3D Carver video.

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Our 3D Carver Pattern Set includes full-size reproductions of all 52 designs printed on heavy paper stock that can be quickly removed from the binder.

3DC-900
Pattern Set, List: $20.00 SALE: $14.90

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The **3D Carver Video** is the perfect introduction to this exciting tool. You'll see the system in action as the narrator offers a complete step-by-step explanation.

3DC-999
3D Carver Video List: $13.00 SALE: $10.00

The 3D Carver System™ & Templates are protected by U.S. patent #5,146,965 & international patents.

The 3D Router Carver™ System is available from these fine dealers. Call the number listed to find the store nearest you or to receive a free catalog.
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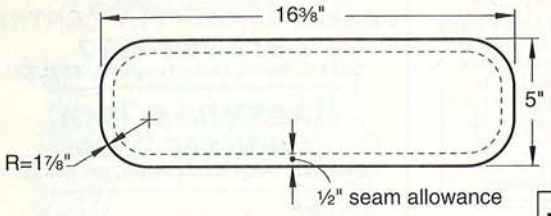
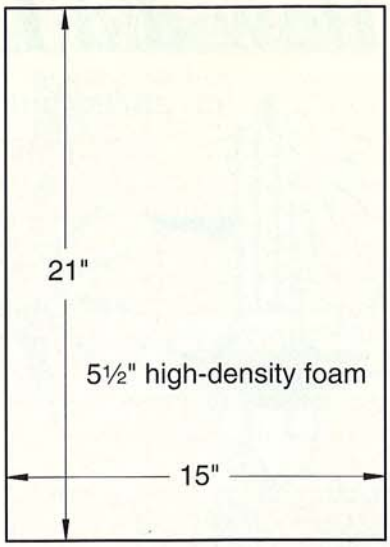
Circle No. 1335

Coffee Table and Ottoman

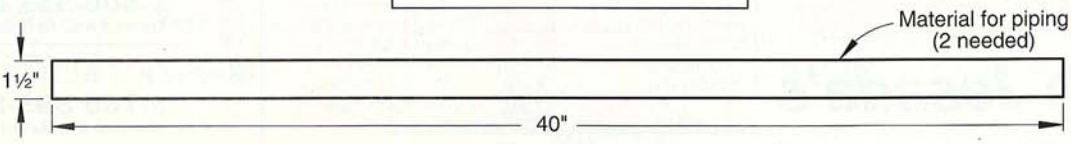


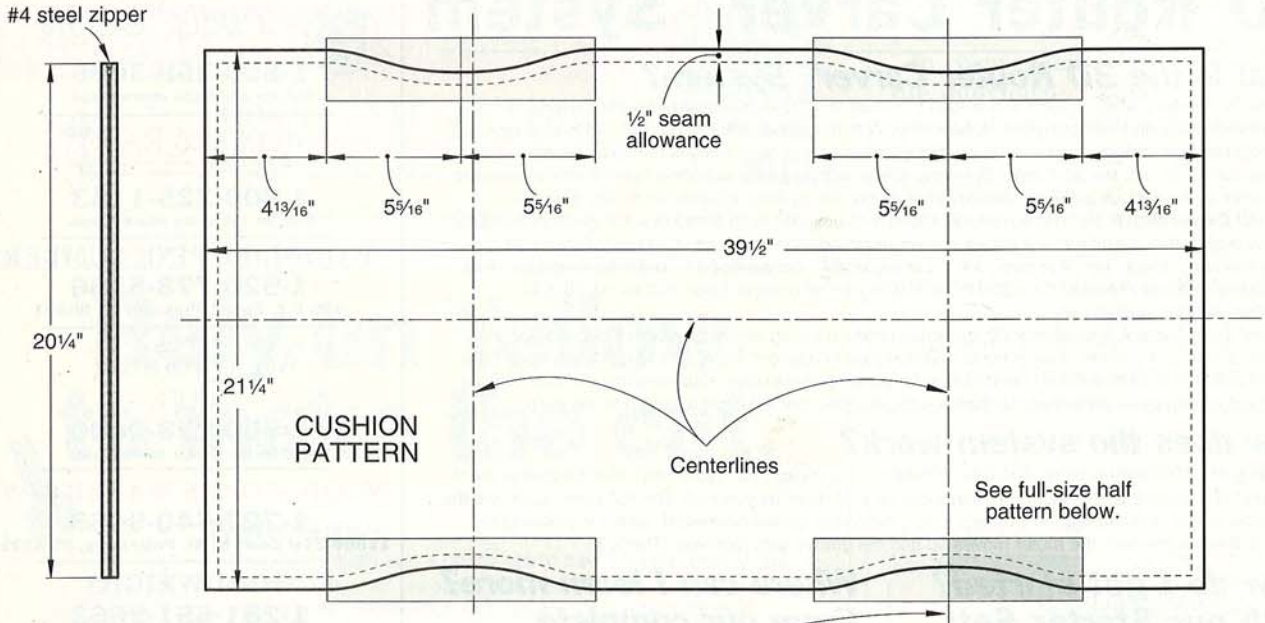
END PATTERN
(2 needed)

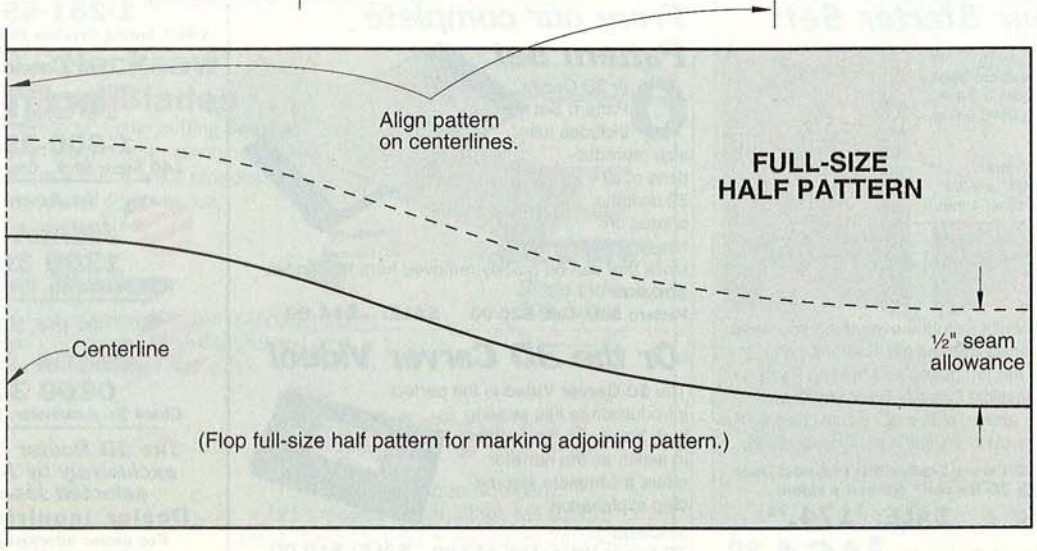
CUSHION PARTS VIEW



Note: Checking with upholsterers around the country, we learned that the supplies and the thickness of materials vary greatly. We recommend providing our drawings and your chair to your upholsterer, and having them make the cushion to fit your chair.







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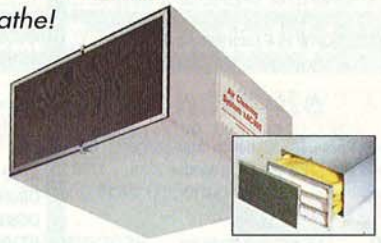

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BN200	18 ga. brad nailer kit 3/4" - 2"	134
CDA250	bammer cdls 15 ga 2 1/2" fin nailer	277
CF1400	1 hp pancake compressor	194
CF15401	1/2 hp side stack compressor	292
CF24002	hp side stack compressor	318
CFN250	bammer cdls 16 ga 1-2 1/2" fin nailer	277
DA250	15 ga. angle fin nailer kit 1 1/4" - 2 1/2"	199
DA250A	15 ga. ang fin nailer kit 1 1/4" - 2 1/2"	234
FN250A	16 ga. finish nailer kit 3/4" - 2 1/2"	182
FR350	framing nailer w/case 3 1/2" capacity	287
NS100	narrow crown stapler kit 1/2" - 1"	94
NS150	narrow crown stapler kit 1/2" - 1 1/2"	154
NSS150	18 ga 1/4" narrow crwn stapler kit	178
330	speed block finishing sander	67
332	Quiksand 5" rndm orb w/stikit pad	58
333	Quiksand w/hook & loop, dustls	64
333VS	5" var. speed Quiksand ros, dstls	84
340	1/4 sheet finishing sander dstls	54
352VS	3" x 21" belt sander dstls w/var sp	174
360	3" x 24" belt sander w/dust bag	213
360VS	3" x 24" belt sander, vs with bag	228
362	4" x 24" belt sander w/dust bag	222
362VS	4" x 24" vs dustless belt sander	236
505	1/2 sht fin sander	138
5116	omni jig	274
556	bisc joiner w/case & tilt fence	134
557	deluxe plate joiner kit	197
690	1 1/2 hp router	138
691	1 1/2 hp "d" handle router	159
693PK	1 1/2 hp plunge router, fixed base, cs	194
697	router table with 1 1/2 h p motor	232
698	router table only	134
6931	plunge router base	82
7116	new 24" omnijig	308
7336	6" random orbit var. speed sander	142
7518	3 1/4 hp fixed base router-5 sp	288
7539	3 1/4 hp plunge router-5 speed	289
9444	profile sander kit w/accys & cs	99
9444VS	Var. speed profile sander kit	111
9543	Quik-Change bayonet saw kit	166
9862	12v cordless kit w/2 batteries, case	152
9862F	12v kit w/2 batt, charger & flashlite	159
9872	14.4v crdls drill kit w/2 batt. & case	186
9874	14.4v 1/2" t handle cdls drill kit	199

Panasonic

EYC003	combo 15.6v drill & 12v wood saw w/4 batteries	398
EY6100EQKW	12V cdls drill w/kit 2 batteries, chrgr & case	174
EY6230FQKW	15.6v cordless kit complete w/free job radio, 1/2" chuck	206

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22-44 Pro	22" pro drum sander	1799

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HD77M	7 1/4" magnesium worm drive saw	169
HD1605-02	biscuit joiner	134
3400	10" table saw w/carb blade & stand	198

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JJ-6CSXW	6" enclosed stand white jointer	499
JWP-15CSW	15" white enc. stand planer	1199
JWBS-14CSW	14" white enc. bandsaw	569
JTAS-10X650-WI	3 hp white cabinet saw/accys	1399
JWTS-10CWPFX	1 1/2 hp contractors saw w/accys	795
JPM-13	13" planer moulder	795
JWS18H0	1 1/2" hpshaper 1/2" & 3/4"spindls	524
JML-1014	mini lathe	324

BOSCH

1275DVS	3" x 24" vs dustless belt sander	213
1276DVS	4" x 24" vs dustless belt sander	224
1278VSK	compact belt sander kit	128
1295DH	5" random orbit sander	82
1584AVSK	clic barrel handle jig saw, vs w/case	149
1587AVSK-50	50th anniv. jig saw kit	156
1587AVSK	top handle jig saw, var sp w/case	149
1613EVS	2 hp var sp plunge router	199
1615EVS	3 1/4 hp plunge router	298
1617	1 3/4 hp router	158
1617EVS	2 hp electronic var. speed router	179
1618	1 3/4 hp D-handle router	169
3107DVSK	5" random orbit sander with case	114
3315K	12v crdls t handle w/2 bat, cs & chrg	158
3615K	14.4v cdls drill kit w/2 batteries	174
3725DVS	5" dustless vs random orbit sander	144
3727DVS	6" dustless vs random orbit sander	148
3915	10" slide compound miter saw	498

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MSXE-636-2	Multimaster triangular sander *includes case, paper asst. & 2 blades*	172
99-55-13	Fein turbo vac II	248
MSFE636-1	Random orbit sander	489

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AP12	12" port. planer	345
DBJ50	detail biscuit jointer	68
DC500K	detail carver kit	62
HT20VSK	multi rotary tool w/cs & accys	48
ML618	18" wood mini lathe	199
OSS450	oscillating spindle sander	149
RE185	2 1/4 hp fixed base vs router	109
SC165VS	16" vs scroll saw	164

HITACHI

C7SBK	7 1/4" circ. saw w/case	109
C8FB2	8 1/2" slide compound miter saw	458
C10FC	10" compound miter saw	198
C10FS	10" slide compound miter saw	698
DN10DYK	9.6V cdls right angle kit	168
DS14DV-G	14.4v kit w/2 bat & free Gerber tool	209
M12V	3 hp var speed plunge router	189
NR83A	full head strip nailer, 2 - 3 1/2 cap	379
NV83A	coil nailer, 2" to 3 1/4" capacity	379
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64A	1 1/2 hp tbl saw w/accu fence	745
66	3 hp, 1 ph 10" t.a. saw w/50" fence	1995
66	5 h p, 1 ph 10" t.a. saw w/50" fence	2095
73	1 1/2 hp dust collector	389
75	3 hp dust collector	675
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412	12 1/2" portable planer	395
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0232NK	18 ga brad kit 3/8"-1 1/4" with case	68
0566T	angle finish nailer 1"-2 1/2"	202
0626NK	18 gauge narrow crown stapler 3/8"-1 " with case	103
0638S	narrow cr stapler 3/4"-1 1/2"w/cs	179
ITM/ART	0241 & 0626 in one case	119

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FC107	7 pc carbide forstner bit set	89
JS100	biscuit joiner	94
JS102	biscuit joiner w/var. angle fence	118
FT2000E	3 hp plunge router	184
F410	10" x 40t quiet blade	48
F810	10" x 80t quiet blade	73
LM72M010	10" x 24t flat top rip blade	36
LU82M010	10"x 60t crosscut/rip blade	44
LU84R010	10" x 50T red combo blade	42
LU85R010	10" x 80T red crosscut blade	58
LU92M010	10" x 60 teeth TCH laminate	59
LU98M010	10" x 80 teeth TCH lam & wood	67
SD208	8" safety dado	94
SD308	8" safety dado with case	116
SD508	new 8" super dado set	167
SD608	8" dial-a-width dado	198
TK406	10" x 60 teeth thin kerf blade	36
TK806	10" x 80 teeth thin kerf blade	47
TK906	10" x 50 teeth thin kerf blade	34
TR215	8 1/2" compound saw	238

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6095DWE	9.6v cdls drill kit w/2 batt	128
6095DWLE2	same as above w/flashlght	139
6213DWAE	12v cordless kit w/ 2 batteries	169
6233DWAE	14.4v cordless kit w/2 batteries	199
6333DWAE	14.4v 1/2" cordless kit	209
BO5001	5" random orbit sander	67
LS1013	10" slide dual comp miter saw	558
LS1211	12" slide dual comp miter saw	789
N1900B	3 1/4" planer	146

Milwaukee

6490-6	10" miter saw	274
6496-6	*new* 10" slide compound miter saw	545
6497-6	10" slide compound saw w/accs	619
6537-22	10 amp recip saw w/case	178

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SKS	narrow crown stapler	247
SLP20	brad nailer w/cse 5/8"-1 5/8" cap	198
SFN40	finish nailer 1 1/4"-2 1/2" cap	338

DELTA

11-990	12" drill press	188
14-650	hollow chisel mortiser	238
22-560	*new* 12" portable planer	378
23-710	*new* sharpening center	167
28-185	bench top band saw	157
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31-780	b.o.s.s. oscillating spindle sandr	193
36-865	versa feeder stock feeder	248
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40-540	16" vs scroll saw	179
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43-505	router/shaper	299
50-840	1 hp dust collector, 650 cfm	219
50-850	1 1/2 hp dust collector, 1200cfm	299
50-860	room air cleaner, 850 cfm	234

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DW100	3/8" drill, 0-2500 rpm, w/chuck key	62
DW4PAK	18v kit circ saw, recip saw, hammr drill and light	559
DW309K	recip saw, var sp, w/blades & cs	168
DW321K	top handle jig saw kit	158
DW359K	7 1/4" circular saw w/case	128
DW378G	7 1/4" framers saw	168
DW420	5" random orbit sander, psa	62
DW421	5" dstls mdm orb sander, velcro	67
DW423	5" vs dustls random orbit sander	79
DW431	3" x 21" dstls belt sander var sp	185
DW443	6" rt angld var sp ROS sanderw/h&l	132
DW610	1 1/2 hp router, 9 amp	144
DW621	2 hp vs dstls plunge router	198
DW677K	3 1/4 hp planer kit	149
DW682K	biscuit joiner kit	188
DW705	12" miter saw w/carb blade	358
DW708	*new* sliding comp. miter saw	644
DW733	*new* 12 1/2" portable planer	435
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DW788	*new* 20" var. speed scrollsaw	448
DW965K	12v right angle drill kit	189
DW972K2	12v crdls kit/w battery & cs	179
DW972KS2	12v combo drill & saw kit	274
DW991K2	DW991K with two batteries	206
DW991KC2	14.4v drill & recip saw combo kit	372
DW991KL2	14.4v drill, circ saw, flashlight kit	349
DW991KS2	14.4V cdls drill & circ saw kit	338
DW995K	18V 1/2" drill w/batt, chrgr & cs	228
DW995KC2	18v drill & recip saw combo kit	395
DW995KS2	18V drill & saw combo kit	377
DW997K	18V hammer drill kit, 1/2" chuck	239
DW997KC2	18V hammer drill & recip saw kit	415

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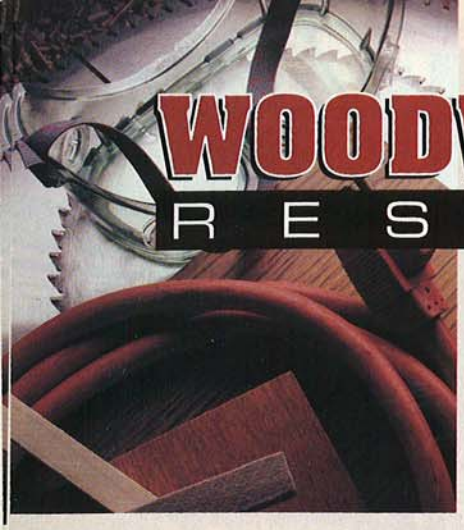

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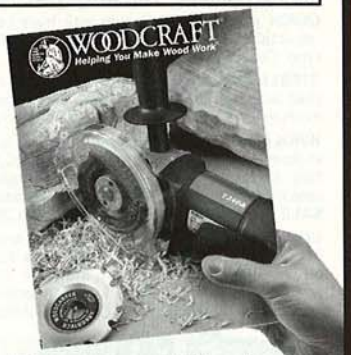

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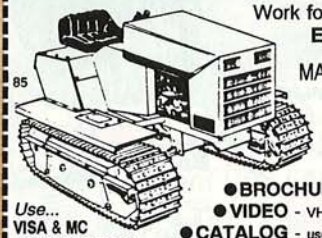

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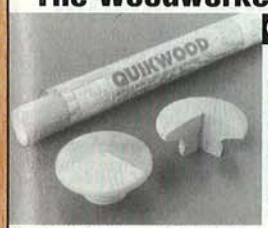

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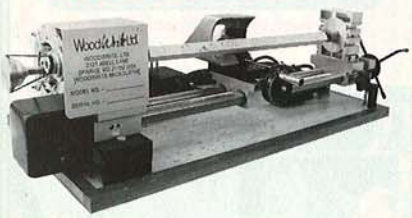

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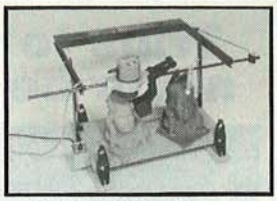

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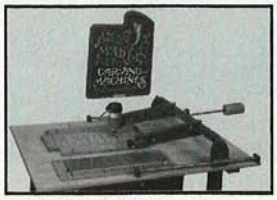

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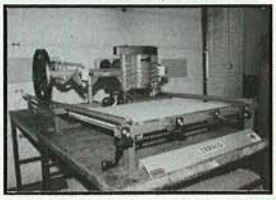

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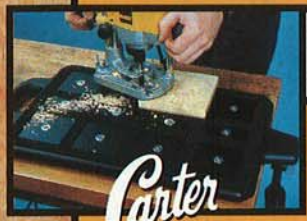

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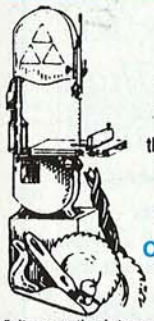

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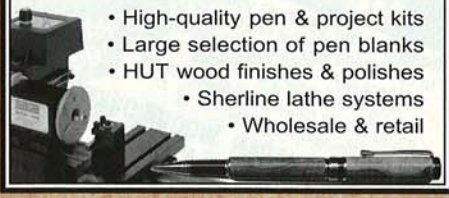

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14-650P **1/2 H.P. Hollow Chisel Mortiser** SUPER BONUS: w/ 4 Free Mortise Chisels & Bits (1/4",5/16",3/8",1/2") $248.00

50-840P **1 HP 650 CFM Dust Collector** Includes Over $27.00 Value Free
•FREE 1-Delta 4' x 10' Dust Hose
•FREE 1-Delta Alum. Blast Gates
•FREE 2-Delta 4" Hose Clamps
SUPER BONUS BUY!
TOTAL PACKAGE ONLY $235.00

50-850P **1-1/2 HP 1200 CFM Dust Collector** Includes Over $42.00 Value Free
•FREE 1-Delta 4' x 10' Dust Hose
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28-275 **14" Open Band-Saw** $497.90*
28-280 **14" Enclosed Band Saw 1 HP** $679.00*

31-780VP **OS Sander** Super Bonus Buy: Includes Sanding Spindle Set, PLUS Free Abrasive Rubber Cleaning Stick & Delta T-Shirt ($89 value) $214.95

36-235 **12" Compound Miter Saw** $308.00
40-650 **Q-3 18" Scroll Saw** $398.90
37-190 **6" Deluxe Jointer** $379.00*
NEW! *37-195* **6" Pro Jointer** $519.00
37-350A **8" Jointer** w/stand $1337.90*
43-379 **Special Edition Shaper** $1235.00*
43-505 **Router/Shaper** $297.90
50-345 **Universal Mobile Base** $48.40
31-280 **Sanding Center** $728.00*

★ Price After Delta Rebate

DELTA

17-900P **16-1/2" Floor Drill Press** *BONUS BUY:* Includes Delta 17-920 Mortising attachment & 4 chisels in case (a $68.00 value) $358.90
17-900 **16-1/2" Floor Drill Press** $344.00
23-710 **Sharpening Center** $148.90
31-460 **4x6 Belt/Disc Sander** $117.90
31-695 **6x9 Belt/Disc Sander** $293.90

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78-900 **50" Right 12" Left Fence System**.....$339.00

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NEW! *JDS 750* **750 CFM Filtration System** $255.00
JDS 8-12 **1570 CFM Filtration System**. . .$488.00

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BONUS: Free Extra Set of Planer Knives & Dust Chute!
Features: •Quick change knife system •Exclusive cutterhead-snipe control lock •Easy-to-read English and Metric scale
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DW733 **12-1/2" Planer** w/ extra set of knives & dust chute $397.90
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DW 708 **12" Compound Sliding Miter Saw** w/ free dust bag . .$642.00
DW 744 **10" Table Saw** $497.00
DW 682K **Biscuit Joiner** with FREE 100 Biscuits (⅜ value) .$157.90
DW421 **Sander** $69.95
DW 423 **5" EVS R/O Sander w/H&L & Dust Collector** $82.50
DW 991KS-2 **14.4V Combo Drill & Saw Kit w/case** . . .$329.00
DW 364 **7-1/4 Circular Saw with Brake** $149.90
DW 677K **3-1/8" Planer with case** $149.90
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DW625 **VS Electronic 3HP Plunge Router** BONUS: Free Fine Depth Adj. (a $25.00 value) $275.00
DW621 **2HP VS Plunge Router** BONUS: Free Fine Depth Adj. (A $20.00 value) $188.90
DW995KS-2 **18V Combo Drill & Saw Kit w/case**. . . $367.50
DW321K **5.8A Jig Saw Kit** $162.00
DW972K-2P **12V Cordless Drill w/ 2 Batt.** BONUS: Free DeWalt flashlight $188.95
DW991K-2P **14V Cordless Drill with 2 Batteries** BONUS: Free DeWalt flashlight. $208.95

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AMT 53006 4-1/2" Micro $7.50
AMT 00506 6" Bar Clamp $12.95
AMT 00512 **12" Bar Clamp** $15.45
AMT 00518 **18" Bar Clamp** $16.70
AMT 00524 **24" Bar Clamp** $17.95
AMT 00536 **36" Bar Clamp** $20.55
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DRILL DOCTOR
Sharpen drills almost as easily you sharpen pencils. Now with Extra FREE Diamond Wheel (a $20 value).
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#DRX 750SP **3/4" Cap** $155.90
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3612C **3HP Plunge Router with Brake**...$246.90
9820-2 **Blade Sharpener** $229.90
GEO600 **Die Grinder** $85.95
6222DWLE **9.6V Crdls Drill, 2 Batt. & Flashlight** . .$117.95
6213DWAE **12V Cordless Drill Kit** $169.00
6233DWAE **14.4 Cordless Drill Kit** $183.00

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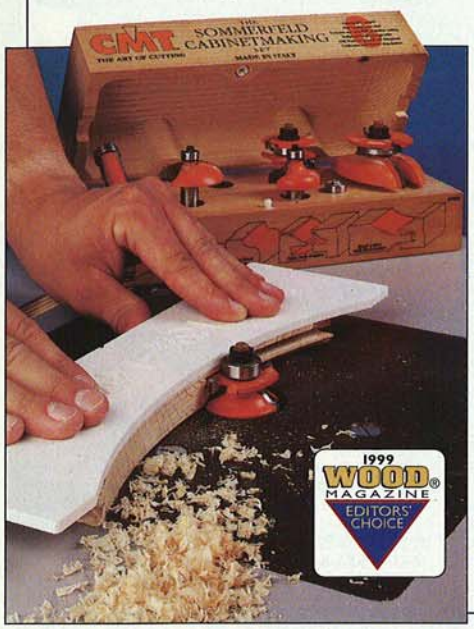
Templates and bits relax the learning curve for making arch-topped doors

I've always marveled at finely crafted arched raised-panel doors, but blanched at the thought of making all those different size templates. Marc Sommerfeld has simplified and streamlined the process with a system of router bits, templates, and a helpful videotape.



The well-conceived template set is the key to the system. It includes 20 plastic templates (half for shaping the rail, and half for shaping the panel) for making doors 9½" to 22" wide.

I found it easy to tack the templates to my workpieces, and the nail holes vanished when I removed the template for the final milling operations. I tested the Roman set, but they're also available in French Provincial, Classic Country, and Cathedral styles.

The six-piece router bit set includes nearly every bit you'll need to make a full set of cabinets: a panel-raising bit, rail-and-stile bits, an outer door-shaping bit, an extra-long flush-trim bit, and a matching drawer-front bit. A drawer-lock bit and rabbeting bit would have been nice to complete the ensemble.

I particularly like the design of the raised-panel bit. With two different size bearings, the larger bearing gave me a less-than-full-depth cut, which is safer and requires less power than the traditional full-depth cut. After the first pass, I simply changed to the smaller bearing—without changing any other settings on my router—and made the smooth finish cut.

Marc Sommerfeld himself takes you through the entire doormaking process on the free videotape that comes with the router bits. That's a nice plus that will give many a woodworker the confidence to make his own arch-topped doors.

— Tested by Dave Henderson

PRODUCT SCORECARD

The Sommerfeld Cabinetmaking Set

Performance	★ ★ ★ ★ ★
Price	$279 (bit set); $79 (templates)
Value	★ ★ ★ ★ ★

Sommerfeld's Tools for Wood, P.O. Box 416, Remsen, IA 51050. Call 888/228-9268.

Continued on page 110

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3X18	.86 ea	4X36	1.35 ea
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3X23 3/4	.93 ea	6x89	6.24 ea

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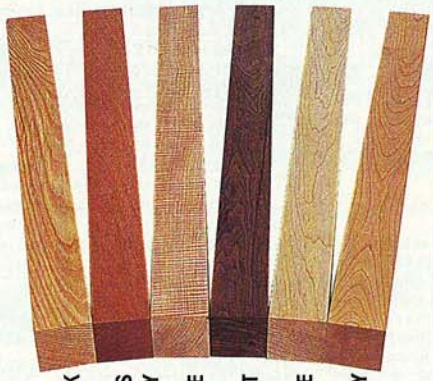

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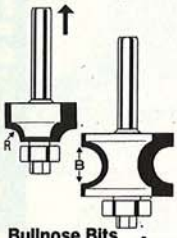
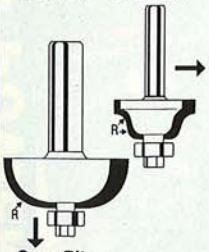
Roundover Bits
with Bearing

1/4" Shank	Radius	
WL-1040	1/16"	$9.
WL-1041	1/8"	$9.
WL-1042	3/16"	$9.
WL-1043	1/4"	$9.
WL-1044	5/16"	$10.
WL-1045	3/8"	$11.
WL-1046	1/2"	$13.
1/2" Shank		
WL-1049	1/8"	$9.
WL-1042-5	3/16"	$9.
WL-1050	1/4"	$9.
WL-1044-5	5/16"	$10.
WL-1051	3/8"	$12.
WL-1052	1/2"	$13.
WL-1053	5/8"	$16.
WL-1054	3/4"	$18.
WL-1055	7/8"	$25.
WL-1056	1"	$27.
WL-1057	1-1/8"	$30.
WL-1058	1-1/4"	$30.



Bullnose Bits
with Bearing
1/4" Shank • Bead Opening

WL-1100	1/4"	$12.
WL-1101	3/8"	$14.
WL-1102	1/2"	$16.
WL-1103	5/8"	$18.
WL-1104	3/4"	$19.
1/2" Shank		
WL-1110	1/4"	$12.
WL-1111	3/8"	$14.
WL-1112	1/2"	$16.
WL-1113	5/8"	$18.
WL-1114	3/4"	$19.
WL-1115	1"	$22.
WL-1116	1-1/8"	$25.
WL-1117	1-1/4"	$28.
WL-1118	1-1/2"	$32.



Cove Bits
1/4" Shank • Radius

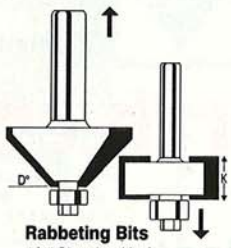
WL-1159	1/8"	$10.
WL-1160	3/16"	$10.
WL-1161	1/4"	$11.
WL-1162	3/8"	$13.
WL-1163	1/2"	$14.

Cove Bits (continued)
1/2" Shank

WL-1169	1/8"	$10.
WL-1170	1/4"	$11.
WL-1171	3/8"	$13.
WL-1172	1/2"	$14.
WL-1173	5/8"	$18.
WL-1174	3/4"	$20.

Chamfer Bits
1/4" Shank • Degree

WL-1180	15°	$10.
WL-1181	25°	$10.
WL-1182	45°	$12.
WL-1183	45°	$14.
(for up to 3/4" material)		
1/2" Shank		
WL-1184	45°	$10.
WL-1185	11-1/2°	$12.
WL-1186	15°	$12.
WL-1187	22-1/2°	$12.
WL-1188	30°	$14.
WL-1189	45°	$15.
WL-1190	45°	$22.
(for up to 1-1/4" material)		



Rabbeting Bits
1/4" Shank • Kerf

WL-1220	1/2"	$11.
WL-1220-2	1/16"	$10.
WL-1220-3	1/8"	$10.
WL-1220-4	1/4"	$10.
WL-1220-5	3/8"	$10.
1/2" Shank		
WL-1225	1/2"	$11.
WL-1225-2	1/16"	$10.
WL-1225-3	1/8"	$10.
WL-1225-4	1/4"	$10.
WL-1225-5	3/8"	$10.
WL-1225-6	3/4"	$12.

Roman Ogee Bits
1/4" Shank • Radius

WL-1230	5/32"	$13.
WL-1231	1/4"	$15.
1/2" Shank		
WL-1235	5/32"	$13.
WL-1236	1/4"	$15.

Double Roman Ogee
1/4" Shank • Radius

WL-1240	5/32"	$18.
WL-1241	1/4"	$20.
1/2" Shank		
WL-1245	5/32"	$18.
WL-1246	1/4"	$20.

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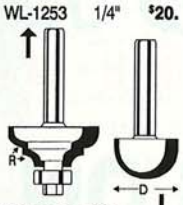
1/4" Shank • Radius

WL-1250	5/32"	$18.
WL-1251	1/4"	$20.
1/2" Shank		
WL-1252	5/32"	$18.
WL-1253	1/4"	$20.

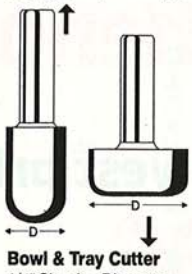


Core Box Bits
1/4" Shank • Diameter

WL-1370	1/8"	$10.
WL-1371	1/4"	$8.
WL-1371-1	3/8"	$9.
WL-1372	1/2"	$10.
WL-1373	3/4"	$12.

Roundnose/Core Box
1/2" Shank • Diameter

WL-1375	1/4"	$8.
WL-1375-1	3/8"	$11.
WL-1376	1/2"	$12.
WL-1377	3/4"	$14.
WL-1378	1"	$16.



Bowl & Tray Cutter
1/4" Shank • Diameter

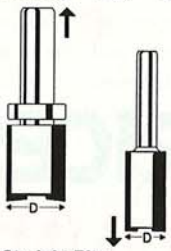
WL-1380	7/16"	$13.
WL-1381	3/4"	$15.
1/2" Shank		
WL-1385	3/4"	$15.
WL-1386	1-1/4"	$18.

Dado & Planer Bit
1/4" Shank • Diameter

WL-1390	3/4"	$12.
1/2" Shank		
WL-1391	3/4"	$12.
WL-1392	1"	$14.
WL-1393	1-1/4"	$15.
WL-1394	1-1/2"	$16.
WL-1394-1	2"	$28.

Pattern Cutting Bit
1/4" Shank • Diameter

WL-1400	1/2"	$12.
WL-1401	5/8"	$12.
WL-1402	3/4"	$12.
1/2" Shank		
WL-1405	3/4"	$15.
WL-1406	1-1/8"	$16.



Straight Bits
1/4" Shank • Diameter

WL-1001	1/8"	$10.
WL-1002	3/16"	$5
WL-1002-5.5	5.5mm	$5.
(for undersized 1/4" plywood)		
WL-1003	1/4"	$5.
WL-1004	5/16"	$5.
WL-1005	3/8"	$5.
WL-1006	15/32"	$5.
(for undersized 1/2" plywood)		
WL-1007	1/2"	$6.
WL-1008	9/16"	$6.
WL-1009	5/8"	$7.
WL-1010	23/32"	$8.
(for undersized 3/4" plywood)		
WL-1011	3/4"	$9.
WL-1012	1"	$10.
1/2" Shank		
WL-1020	15/64"	$5.
(for undersized 1/4" plywood)		
WL-1021	1/4"	$5.
WL-1019	5/16"	$5.
WL-1022	3/8"	$5.
WL-1023	7/16"	$5.
WL-1024	15/32"	$5.
(for undersized 1/2" plywood)		
WL-1025	1/2"	$6.
WL-1027	5/8"	$8.
WL-1028	23/32"	$8.
(for undersized 3/4" plywood)		
WL-1029	3/4"	$9.

Corner Lock Mitres
For up to 5/8" material
WL-1420-2 1/4" shank $25.

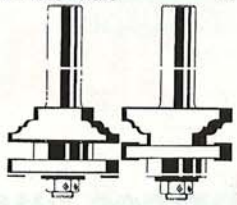
For 1/2" to 3/4" material
WL-1420-1 1/2" shank $30.

For material 3/4" to 1-1/4"
WL-1420 1/2" shank $38.

For the Shaper Lock Mitre WL-1581 $40.

Horizontal Panel Raiser - 3 1/2" Dia. with Undercutter • 1/2" Shank

WL-1346	Ogee	$49.
WL-1347	Traditional	$49.
WL-1348	Convex (Cove)	$49.
WL-1359	12° Facecut with Quarter Round	$49.
WL-1363	Wave	$49.

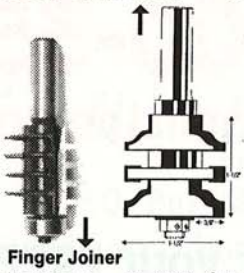


2-piece Rail & Stile Cutter Sets

1/2" Shank		Set
WL-1360	Ogee Profile	$59.
WL-1361	Roundover	$59.
WL-1362	Cove & Bead	$59.

1-piece Rail & Stile Cutter Sets
Just raise the cutter to make the matching cut. No changing or reversing.
1/2" Shank

WL-1365	Ogee Profile	$49.
WL-1366	Roundover	$49.
WL-1367	Cove & Bead	$49.
WL-1368	Wedge	$49.
WL-1374	Dbl Roundover	$49.

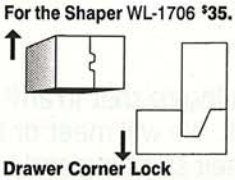


Finger Joiner Router Bit WL-1429 $39.

For the Shaper WL-1580 $89.

Reversible Glue Joint
WL-1430 1-3/4" Diam $35.

For the Shaper WL-1706 $35.

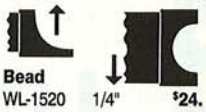


Drawer Corner Lock
Makes drawer side separation virtually impossible
1/2" Shank
WL-1435 For 1/2" material $30.

SHAPER CUTTERS
3/4" BORE

Corner Round

WL-1509	1/8"	$22.
WL-1510	1/4"	$24.
WL-1511	3/8"	$26.
WL-1512	1/2"	$26.
WL-1513	3/4"	$30.
WL-1514	1"	$32.
WL-1515	1-1/4"	$38.



Bead

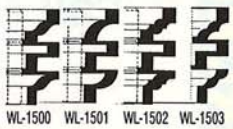
WL-1520	1/4"	$24.
WL-1521	3/8"	$26.
WL-1522	1/2"	$26.
WL-1523	3/4"	$28.
WL-1524	1"	$30.

Flute

WL-1530	1/4"	$24.
WL-1531	3/8"	$26.
WL-1532	1/2"	$26.
WL-1533	3/4"	$28.
WL-1534	1"	$30.

Rabbeting/Straight

WL-1540	1/4"	$24.
WL-1541	3/8"	$26.
WL-1542	1/2"	$26.
WL-1543	3/4"	$28.
WL-1544	1"	$30.
WL-1545	1-1/2"	$32.
WL-1546	2"	$48.



WL-1500 WL-1501 WL-1502 WL-1503

SHAPER CUTTERS 3/4" BORE
1-piece Rail & Stile
Just raise the cutter to make the matching cut. No changing or reversing.

WL-1500	Roman Ogee	$89.
WL-1501	Roundover	$89.
WL-1502	Cove & Bead	$89.
WL-1503	Dbl Roundover	$89.

WL-1600
WL-1601
WL-1602
WL-1603
WL-1604
WL-1605

Panel Raisers (Shaper Cutter)
3/4" Bore

WL-1600	Ogee	$59.
WL-1601	15° Facecut	$59.
WL-1602	18° Traditional	$59.
WL-1603	Convex (Cove)	$59.
WL-1604	12° Facecut with Quarter Round	$59.
WL-1605	Wave	$59.

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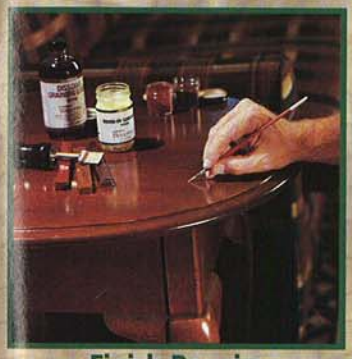
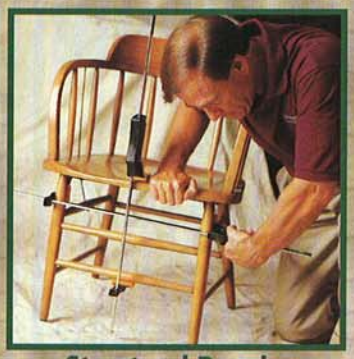
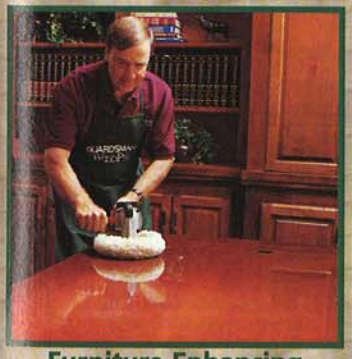
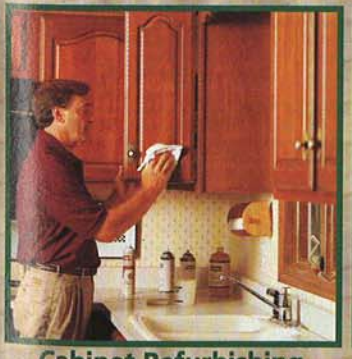
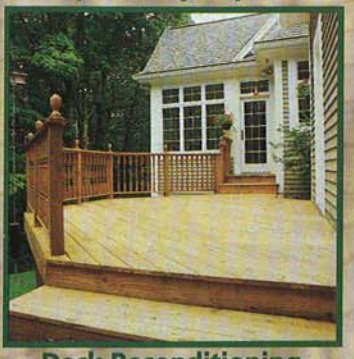

Finish Repairs


Structural Repairs


Furniture Enhancing

Upholstery Repairs


Cabinet Refurbishing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CENTRAL MACHINERY

1" BELT/ 5" DISC SANDER

Remove the belt back plate and sand all types of curves and odd shapes. With the back plate in place, you can apply pressure for faster stock removal.

- Motor: 1/3 HP, 2.4 amp, 60 Hz, 110V, 3450 RPM • Dust collection
- Table: 5" x 5", tilts to 45°
- Belt length: 30", 3450 FPM belt speed
- Shipping weight: 19 lbs.

~~$59.99~~ $45.99
ITEM 34951-3ERA

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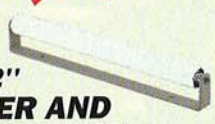

12-1/2" ROLLER AND BRACKET SET

Double your table saw capacity! Attach to sawhorse or other surface and make your own roller table. Avoid the high cost of roller stand by making your own. Features: chrome polished roller, steel bracket, two holes for mounting. Roller is 1-1/4" diameter and 12-1/2" long.

ITEM 30026-4ERA ~~$7.99~~ $3.99

DELTA®
Delta 36-610

10" TABLE SAW

Saw's powerful 115V, 15 amp, single phase motor provides 5500 RPM blade speed to make quick work of your stock. 22-1/4" x 38-3/8" surface allows you to rip to the center of 4 ft. panels with ease. Includes stand, miter gauge, T-square fence system, table insert, see-through blade guard with anti-kickback fingers, and a 10" saw blade.

Arbor: 5/8"; Max. cutting depths: 3-1/8" @ 90°, 2-1/8" @ 45°; Miter gauge groove: 3/8" x 3/4"; Maximum rip to the right of blade: 27"; 46-3/8"L x 27-1/2"W x 40-1/4"H; 153 lbs. net wt.

~~$389.99~~ $359.99
ITEM 39516-1ERA

CENTRAL MACHINERY

10" PLANER

- 2 HP, 110V, 1 phase, 11 amp, 8000 RPM
- 5-1/8" working distance
- 19" x 16-5/8" x 16" overall dimensions
- 10-1/8" x 9-1/8" feed table
- 2-blade cutter head
- 10-1/8" blade size
- 61 lbs. shipping wt.
- Stand sold separately

~~$239.99~~ $199.99
ITEM 32377-3ERA

PLANER STAND

• 20" x 10" x 27" • Shipping wt.: 20 lbs.

ITEM 32969-2ERA $32.99

2 PC. REPLACEMENT BLADE SET

• High speed steel

ITEM 36068-1ERA $29.99

CHICAGO Electric Power Tools

MINI BENCH GRINDER WITH FLEX SHAFT

At 7.4 lbs. this mighty mite is small enough to pack along to the job site. Perfect for deburring, grinding and polishing small parts. Use the 32" flex shaft for precision work and hard-to-reach surfaces. Includes flex shaft with wrenches and a block of buffing rouge. Variable speed control, ball bearing construction.

Motor: 110V, 60 Hz; 0-10,000 RPM; Wheel size: 3" x 3/4"; Arbor: 10mm; Flex shaft collet: 1/8"

~~$59.99~~ $45.99
ITEM 36841-4ERA

CENTRAL MACHINERY

29" UNIVERSAL TOOL STAND

This heavy duty all metal stand fits Central Machinery 13", 15", and 16" scroll saws, 10" bench table saw, and bench drill presses, as well as other brands. Also use for miter saws and jointer/planers.

~~$39.99~~ $29.99
ITEM 07769-1ERA

34" HEAVY DUTY UNIVERSAL TOOL STAND

Change the stand configuration to fit all Central Machinery bandsaws, bench top drill presses, & electronic scroll saws. Also use for Delta tools: 8" and 12" bench drill presses (11-950 and 11-990), 15" scroll saw (40-150), and 1" belt/5" disc sander (31-080). Fits many other tools as well. 34" high.

~~$49.99~~ $39.99
ITEM 32971-1ERA

CENTRAL MACHINERY

5 SPEED BENCH DRILL PRESS WITH KEYLESS CHUCK

Includes 1/2" chuck capacity with no key required, 5 speeds, and a 1/3 HP motor turning 1720 RPM.

Five speeds: 620, 1100, 1720, 2340 and 3100 RPM; 2" spindle stroke, 8-1/4" swing; Column diameter: 1-13/16"; Table dimensions: 6-1/2" x 6-5/8"; tilts 45° left and right; Base dimensions: 7-3/16" x 5-5/8"; Height: 22-1/2"

ITEM 34231-6ERA $49.99

5 SPEED BENCH DRILL PRESS

- 620 to 3100 RPM • 22-1/2" height
- 1/3 HP, 2" spindle stroke, 8-1/4" swing
- 6-1/4" square table • 1/2" chuck
- 8-1/4" max. distance spindle to table

ITEM 01844-2ERA $48.99

DRILL MASTER

TiN COATED FORSTNER BIT SETS

Titanium nitride runs cooler, cuts easier, and lasts longer than standard steel! Very smooth cutting – will not burn wood. Hardened and precision machined edges. Featuring 3/8" reinforced shanks, individually organized wooden case and bits over 1" have saw tooth design. Stand not included.

16 PC. SET

- 16 sizes from 1/4" to 2-1/8" by 8ths

~~$39.99~~ $29.99
ITEM 39812-1ERA

20 PC. SET

- 20 sizes from 1/4" to 3/4" by 16ths, 7/8", 15/16", 1" to 2" by 8ths

~~$39.99~~ $32.99
ITEM 39813-1ERA

CHICAGO Electric Power Tools

1/2 OFF!

HEAVY DUTY 4" DISC GRINDER

- Compact and powerful
- 115V, 5.18 amps, 10,000 RPM
- 5/8"-11 spindle with 7/8" arbor adapter
- 11" long • Spindle lock
- 5-5/8 lbs. shipping weight
- 4-1/2 lbs. tool weight

~~$39.99~~ $19.99
ITEM 01711-4ERA

4" INDUSTRIAL GRINDING WHEELS

- 24 grit, 7/8" arbor hole , 3/16" thick

TYPE	ITEM	PACK OF 10
FOR METAL	35551 -0ERA	$7.99
FOR MASONRY	35552 -1ERA	$6.99

PROPANE TORCH

Ideal for melting ice on sidewalks and driveways. Attaches readily to propane tanks. Wand comes with a flow valve and turbo blast trigger for maximum flame and temperatures over 4500°F! Includes nozzle assembly, metal handle, hard rubber grip, and 6 ft. 8-1/2" hose.

~~$19.99~~ $15.99
ITEM 36346-5ERA

DEWALT
DeWalt DW705

LIMITED QUANTITIES

12" HEAVY DUTY COMPOUND MITER SAW

- Spindle lock • Electric brake
- Stainless steel miter scale with 9 positive stops • 0-48° bevel capacity
- 0-48° miter left and right
- Factory reconditioned, factory perfect
- Capacities 5-1/4" crown moulding; 2 x 8 at 45° bevel; 4 x 4 & 2 x 6 at 45° miter
- Head lock down with handle for easy transport • 1" round arbor
- 13 amps; 4000 RPM no load speed
- 100% ball bearing construction
- Includes 32 tooth blade
- 40 lbs. shipping weight

~~$349.99~~ $259.99
ITEM 51594-8ERA

CHICAGO Electric Power Tools

3/8", 14.4 VOLT CORDLESS DRILL KIT WITH KEYLESS CHUCK

High voltage, heavy duty battery gives long run times between charges. T-Handle design makes this drill easy to use. Includes 6 pc. drill bit set, 6 pc. screwdriver bit set, magnetic extension bit, charger, battery, keyless Jacobs® chuck, and carrying case. Variable speed, reversible; 0 to 600 RPM; 6 torque settings: 13-100 in. lbs.

~~$69.99~~ $39.99
ITEM 34793-2ERA

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DEWALT — MULTI-DIRECTIONAL DUST BLOWER

DeWalt DW788R

20" HEAVY DUTY VARIABLE SPEED SCROLL SAW

LIMITED QUANTITIES

Get super-smooth cuts on your most intricate work. Unique parallel arm design provides extremely low noise and vibration. Tool-free blade changing makes it easy to switch between materials. Oversized cast-iron table gives plenty of room to work.

- Front mounted controls
- Multi-directional dust blower
- Table bevels 45° left and right
- Factory reconditioned, factory perfect

ITEM 51734-0ERA **$299.99**

CENTRAL FORGE — SAVE UP TO 50% — TWO CLAMPS PER SET

BAR CLAMP SETS

Hold your work safely and at the correct tension with these quality sets of bar clamps. Two clamps per set.

- Heat-treated steel bar & cast iron jaws
- Plated steel screw with hardwood handle
- 3-1/2" throat depth

OPENING	ITEM	PRICE PER SET
12"	01473-1ERA	$3.99
16"	04068-3ERA	$4.99
20"	04069-1ERA	$6.99
24"	04070-1ERA	$7.99

2 PC. EDGING CLAMP SET

Use with bar clamps when gluing and clamping edging strips.

ITEM 36552-4ERA **$1.99**

CENTRAL PNEUMATIC — WOOD BLACK & DECKER — SAVES PAINT AND THE ENVIRONMENT

INDUSTRIAL HVLP SPRAY GUN

Get better adhesion than standard sprayers and save over 40% in paint/material costs. Maintains 75% transfer efficiency and reduces working pressure to 10 PSI.

1 quart cup; 1/4" NPT; PSI: 50 to 70; CFM: 9.5 @ 50 PSI

ITEM 07901-8ERA **$49.99**

1/4" x 25 FT. COIL SELF STORING AIR HOSE

- Abrasion and corrosion resistant
- 1/4" NPT

ITEM 00829-1ERA **$4.99**

CENTRAL PNEUMATIC CONTRACTOR SERIES

HEAVY DUTY 16 GAUGE BRAD TACKER

This unit packs extra punch to cleanly drive extra long brads every time. Use for cabinetry and carpentry jobs, also paneling, casings, and other construction applications. Features solid aluminum magazine with sliding cover.

- 60 to 100 PSI
- 1/4" NPT inlet
- 3/4" to 2" brad length; 16 gauge
- 100 brad capacity
- 4-1/2 lbs. tool weight

~~$89.95~~ ITEM 31317-6ERA **$69.99**

16 GAUGE BRADS PK. OF 2500

LENGTH	ITEM	PRICE
1"	34122-0ERA	$4.99
1-1/4"	34123-1ERA	$5.99
1-1/2"	34124-0ERA	$6.99
1-3/4"	34125-2ERA	$7.99

IRON HORSE

Iron Horse TAWS1

SAVES TIME & MAN-POWER

ADJUSTABLE HEIGHT WORK SUPPORT

Heavy duty steel base supports rugged plastic rollers. Use with table saws, miter saws, router tables, radial arm saws and many other power tools. Height adjusts from 25" to 43" for maximum versatility. A must for any shop.

ITEM 02379-5ERA ~~$19.99~~ **$16.99**

FOLDING WORK SUPPORT

This heavy duty support folds for travel and storage. • Adjusts from 28" to 46" high • 21"W x 19"D base • 6 lbs.

Iron Horse TAWS2

~~$33.99~~ ITEM 05252-4ERA **$25.99**

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4" "MIGHTY-MITE" TABLE SAW

For quick and easy cutting operations. Perfect for frames, molding, and plastics. Includes blade guard, 50 TPI blade, and adjustable angle plate.

- Motor: .9 amps @ 110 volts, 4500 RPM
- Table: 7-5/8" x 5-5/8" x 6-1/2"; includes two miter slots
- Maximum cutting depth: 3/4"
- Shipping wt.: 6 lbs.

~~$59.99~~ ITEM 36069-3ERA **$45.99**

STANLEY®

Stanley 33-430

POWERLOCK® TAPE MEASURES

- 25 ft., 1" blade remains rigid for 7 ft.
- Chrome-plated case with belt hook
- Yellow Mylar® coated steel blade with Tru-zero hook

ITEM 00906-0ERA **$7.99**

30 FT. TAPE

Stanley 33-489

- Same features as above, but with 30 ft. blade

ITEM 03586-5ERA **$9.99**

DELTA®

Delta 22-540

12" PORTABLE PLANER

- Long lasting high speed steel, reversible, double edged knives
- Precise thickness scale conveniently located for easy reference
- Four precision ground columns to effortlessly raise and lower cutter head
- Includes removable table extensions, and fold away depth adjustment for easy transport
- Convenient carrying handles
- Factory reconditioned, factory perfect

26.2 FPM feed rate; Motor: 15 amp, 120V; Table size with extensions: 12-1/8" x 26"; Capacities: 12" width, 6" thick, 3/16" depth of cut; 8000 RPM, 16,000 CPM; 27-1/4" x 20-1/2" x 15" overall dimensions; 68 lbs. net weight

ITEM 06177-7ERA **$259.99**

NEW PLANER *(SAME AS ABOVE)*

ITEM 00258-6ERA **$299.99**

PLANER BLADES

ITEM 33075-3ERA **$29.99**

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DOVETAIL MACHINE

Create strong, fine looking dovetail joints. Just place stock and pull cam handles to positively lock material in place. Fixture holds both workpieces at the same time – both male and female dovetail cuts are made at the same time. Allows cutting tails, pins, half blind, and standard dovetails. Accepts stock up to 12" wide and 1-1/4" thick. Includes 1/2" template.

~~$49.99~~ ITEM 34102-8ERA **$39.99**

DOVETAIL TEMPLATES

9/16"	38808-0ERA	$9.99
7/16"	38809-0ERA	$9.99
1/12"	38810-0ERA	$9.99

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6 PC. HEAVY DUTY PLIER SET

Drop forged from rugged alloy steel, precision machined, heat-treated and highly polished for long life. Insulating rubber handles for a comfortable grip. Includes 8" lineman's, 10" slip joint, 6" all-purpose diagonal cutters, 7" heavy duty diagonal cutters, 8" needle nose pliers, and 10" groove joint pliers.

~~$11.99~~ ITEM 00532-0ERA **$8.99**

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3 HP PLUNGE ROUTER

Use to cut precision moldings, rabbets, dados, dovetails, recesses for inlays, and much more. 19 amp all ball bearing motor develops 23,000 RPM for unbelievably clean finishes. 2-1/2" plunge depth capacity allows easy penetration into or through work surfaces.

3 adjustable plunge settings; Electric brake; Includes 1/4", 1/2", & 3/8" collets; 115V, 19 amps, 8 ft. cord

~~$139.99~~ ITEM 37793-2ERA **$99.99**

15 PC. ASSORTED BITS

Includes 15 popular sizes of tungsten carbide tipped bits individually organized in a storage case. 1/4" shanks.

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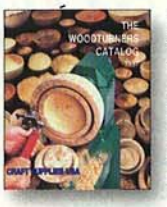

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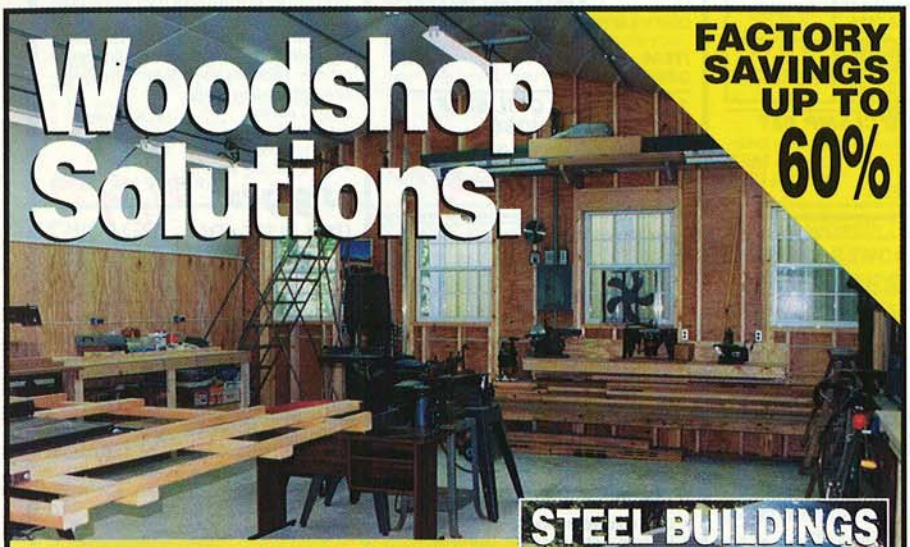

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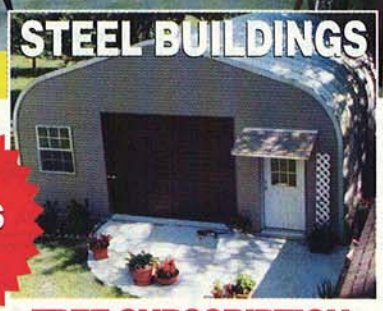

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Circle No. 2030

PRODUCTS THAT PERFORM

SHOP TESTED

Continued from page 104

Hands-free, brain-free switch for dust collector

Your dust-collection system doesn't help you if it's not turned on. And it doesn't get turned on unless you remember to do it. The Automatic Switch "remembers" for you.

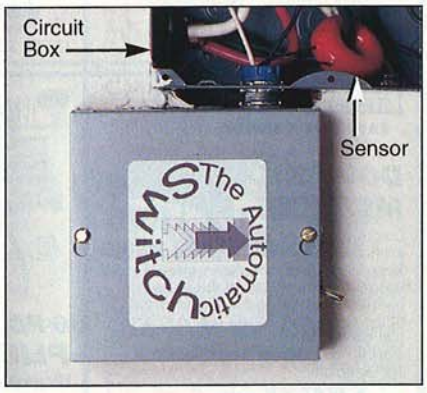
The Automatic Switch's red, donut-shaped sensor (shown in the circuit box *below*) recognizes when I switch on a tool and automatically turns my dust collector on. When I shut the tool off, the collector also shuts down. A manual override switch lets me turn the collector on for tools on circuits not monitored by the sensor.

Shop lighting and the dust collector must be on circuits not activated by the switch, which may mean some rewiring. And, although the installation instructions were clear and thorough, a fair amount of electrical expertise (or an electrician buddy) would be a big bonus.

I like the versatility of The Automatic Switch. It can operate 110-, 220-, and 440-volt dust collectors, single- or three-phase, drawing up to 40 amps. It also senses from any combination of those circuits.

The price tag and need to hire an electrician might scare some woodworkers away. But, I find The Automatic Switch a reliable way to make sure you collect hazardous dust every time you work in the shop.

— Tested by Dave Henderson



PRODUCT SCORECARD

The Automatic Switch

Performance	★ ★ ★ ★ ★
Price	$249
Value	★ ★ ★ ★ ☆

Dan Trimble and Co., 80 Old Gate Rd., Penn Run, PA 15765. Call 724/357-8555.

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DELTA TOOLS

Model	Description	List	Sale
31-750	NEW Bench Random Orbit Sander		Sale 199
28-150	NEW 9" Bench Band Saw		Sale 155
50-860	850 CFM Air Cleaner		Sale 239
31-695	6" Belt/9" Disc Sander	441	299
23-710	Sharpening Center	217	145
31-460	4" Belt/Disc Sander	198	119
40-560	16" 2 speed Scroll Saw	230	129
40-540	16" var/spd Scroll Saw	249	159
11-990	12" Bench Drill Press	255	184
11-090	32" Radial Bench Drill Press	405	279
43-505	1/2" Bench Router/Shaper	398	299
22-540	12" Bench Top Planer		Sale 259
28-195	10" Band Saw	390	319
22-560	12-1/2" Planer w/ extra knives		329
36-865	Versa Feeder Stock Feeder		249
36-220	10" Compound Mitre Saw	294	199
28-185	Bench Band Saw	213	168
36-240	10" Sliding Mitre Saw	589	439
37-070	6" v/spd Bench Jointer	351	265
14-650	Hollow Chisel Mortiser	380	249
17-900	16-1/2" Floor Drill Press	490	329
17-920	NEW Mortise Chisel Kit		Sale 59
36-285	8-1/4" Builders Saw w/ stand		Sale 275
34-555	Sliding Table	487	359
36-250	10" Slide Compound Saw	825	455
31-780	Oscillating Spindle Sander	253	194
31-780K	31-780 w/ 31-781 spindle set		209
46-700	12" Wood Lathe	575	465
40-650	Q3 18" Scroll Saw		Sale 389
36-905	30" Unifence	346	259
36-906	50" Unifence	444	309
36-444	10" Contractors Table Saw		Sale 579

The following tools have a $50.00 rebate ! Price shown is before rebate. Rebates valid thru 3/31/99.

36-455	10" Contractors Table Saw w/ 30" unifence, cast iron wing, 34-914 table board, & carbide blade		Sale 849
22-675	DC380 15" Planer		Sale 1175
28-275	14" Band Saw 3/4 HP		Sale 595
28-280	14" Band Saw 1 HP motor with enclosed stand		Sale 739
28-270	14" Band Saw 1 HP w/ 50-274 mobile base, 28-855 rip fence, & 28-266 cool blocks		Sale 849
31-280	Sanding Center w/ stand		Sale 789
37-190	6" Deluxe Jointer	603	445

NEW Single Stage Dust Collectors

50-850	1-1/2 HP, 1200 CFM		Sale 285
50-851	2 HP, 1500 CFM		Sale 489

MILWAUKEE TOOLS

6527	NEW Sawzall with case	343	169
6537-22	6527 w/quick lok blade change	224	179
0407-22	12V Drill w/kyls chuck&2 batt	380	175
0224-1	3/8" Drill 4.5 amp magnum	236	132
0234-6	1/2" Drill 4.5A mag 0-850 rpm	255	134
0235-1	1/2" Drill w/keyless chuck	255	139
0244-1	1/2" Drill 4.5A mag 0-600 rpm	255	139
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	213	124
0228-6	3/8" Drill 3.5 amp 0-1000 rpm	207	109
0375-1	3/8" close quarter Drill	255	148
0379-1	1/2" close quarter Drill	288	165
6546-6	Screwdriver 200 & 400 rpm	150	89
6547-6	6546-6 w/bits,1/4" chuck & cs	185	109
5399	1/2" D-hdle Hammer Drill Kit	356	219
5397-1	3.8" v/ spd Hammer Drill Kit	275	145
5371-6	1/2" v/ spd Hammer Drill Kit	360	194
3107-6	1/2" v/spd right angle Drill Kit	411	234
6142	4-1/2" Grinder w/cse & acc.	224	132
6490-6	10" Mitre Saw	496	269
6491	6490 w/ carbide blade & bag	594	345
6494-6	10" Compound Mitre Saw	585	319
6266-6	Top Handle Jig Saw	315	159
6496-6	10" Slide Compound Saw	1050	569

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	42
LU82M010	Cut-off	10" 60	93	32
LU84M011	Comb	10" 50	78	45
LU85R010	Super Cut-off	10" 80	115	68
LM72M010	Ripping	10" 24	69	38
LU73M010	Cut off	10" 60	84	49
LU87M010	Thin Kerf	10" 24	72	45
LU88M010	Thin Kerf	10" 60	88	49
LU98M010	Ultimate	10" 80	128	68
LU91M010	Compnd Mitre	10" 60	88	54
F410	Quiet Blade	10" 40	95	54
SD308	8" Dado - Carbide		230	119
SD508	8" carbide w/case & shims		344	172
FB100	16 piece Forstner Bit Set		338	194
94-100	5 pc. Router Bit Door System		320	169
FT2000E	Plunge Router		Sale	185

HITACHI TOOLS

C8FB2	8-1/2" Slide Compound Saw	1169	449
C10FS	10" Slide Compound Saw	1627	579
C15FB	15" Mitre Saw	1346	645
NV45AB	Coil Roofing Nailer	935	379
NT32AE	NEW Pinner 5/8" - 1-1/4"	Sale	85
NT50AE	NEW Pinner 3/4" - 2"	Sale	125
C10RA	10" Table Saw	632	319

MAKITA TOOLS

Model	Description	List	Sale
5090DW	3-3/8" Saw Kit 9.6 volt	280	159
DA391D	3/8 angle Drill 9.6V	166	114
DA391DW	3/8" angle Drill Kit 9.6V	341	175
6095DWE	9.6 volt Drill Kit w/2 batt	Sale	125
6095DWLE2	6095DWE w/flashlight	Sale	139
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28

NEW 18 VOLT MAKITA TOOLS

6343DWAE	1/2" Drill Kit	Sale	249
5620DWA	6-1/2" Circular Saw Kit	Sale	259
DK1016	1/2" Drill & 6-1/2" Saw combo kit	Sale	389

CORDLESS DRILLS WITH 2.0 AMP HIGH CAPACITY BATTERIES

6213DWAE	12V 3/8" Drill Kit	325	169
6233DWAE	14.4V 3/8" Drill Kit	358	205

9900B	3"x21" Belt Sander w/bag	347	165
9924DB	3"x24" Belt Sander w/bag	360	175
N1900B	3-1/4" Planer with case	263	142
1912B	4-3/8" Planer	352	205
N9514B	4" Disc Grinder 4.6 amp	118	65
DA3000R	3/8" Angle Drill	355	185
2708W	8-1/4" Table Saw	637	295
6405	3/8" Drill Rev. 0-2100 rpm	115	65
6013BR	1/2" Drill Rev. 6 amp	270	159
9401	4" x 24" Belt Sander w/bag	458	219
5007NBK	7-1/4" Circ Saw w/ case	250	125
LS1011	10" Slide Compound Saw	995	429
LS1211	12" Slide Compound Saw	1620	695
3901	Plate Joiner Kit	376	159
3612C	3 HP Plunge Router	492	259
LS1040	10" Compound Miter Saw	460	259
LS1013	10" Dual Compound Slide Miter Saw	1088	599
BO5010	5" Random Orbit Sander	142	72
LS1220	NEW 12" Compound Miter Saw		379
9227C	NEW 7/9" Polisher	350	195
SJ401	NEW 16" Bench Scroll Saw	300	175
2702	NEW 8-1/4" Table Saw	Sale	299
2703	NEW 10" Table Saw	Sale	319

SENCO AIR NAILERS

SFN1+	Finishing Nailer 1 - 2" w/ cs	448	299
SNS45	NEW Stapler 7/16" crown, 1" - 2"	540	379
SLP20	Pinner w/cs 5/8 -1-5/8"	422	199
SKS	Stapler 5/8 - 1-1/2"	390	279
SN70	Framing -Clip Hd 2 - 3-1/2"	725	449
SN65	Framing -Full Hd 2 - 3-1/2"	709	379
SN600	NEW Framing 2 - 3-1/2"	699	369
SFN40	Finish Nailer 1-1/4 - 2-1/2"	569	359

NEW Accuset Nailers by SENCO

A100LS	Finish Stapler 1/2" - 1"	180	119
A150LS	Finish Stapler 1/2" - 1-1/2"	220	149
A125BN	Brad Nailer 5/8" - 1-1/4"	160	99
A200BN	Brad Nailer 5/8" - 2"	215	139

BOSTITCH AIR NAILERS

Model	Description	List	Sale
N80S-1	Stick Nailer	Sale	325
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	359
N60FN-2K	Finishing Nailer w/ case	557	269
BT35-2K	Brad Tacker 5/8" - 1-3/8" with case, oil, & brads	279	125
MIIIFS	Flooring Stapler 15 gauge 902		539
S32SX-1K	Finish Stapler-1/2" - 1-3/8" with case & oil	269	139

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Opening Capacity	List	Sale	Box of 6
#0	8"	4-1/2"	20.35	12.10	66.95
#1	10"	6"	23.30	12.90	71.95
#2	12"	8-1/2"	26.75	14.90	83.95
#3	14"	10"	33.85	18.55	105.75

PONY CLAMP FIXTURES

Model	Description	List	Sale	Lots of 12
50	3/4" Black Pipe	15.45	8.50	94.00
52	1/2" Black Pipe	12.65	6.95	79.00

PANASONIC CORDLESS

EY6100FQKW	12V 3/8" Drill kit w/ 2 Ironman batteries, 15 min. charger, & case	379 179
EY6230FQKW	NEW 15.6V Drill Kit with 2 Ironman batteries, 30 minute charger & case	425 209
EY3503FQWKW	5-3/8" 12V Wood Cutting Circular Saw Kit	500 259
EYC103	EY6100FQKW drill, EY3503FQW saw, 2 batteries, 15 minute charger, and case	Sale 299

BIESEMEYER FENCES

B-50	50" Commer. Saw	443	325
T-SQUARE 52	52" Homeshop	360	275
T-SQUARE 40	40" Homeshop	335	255
T-SQUARE 28	28" Homeshop	325	245

AIRY AIR NAILERS

Model	Description	List	Sale
0241SK	Brad Nailer 3/8" - 1-9/16"	180	98
0626SK	1/4" Crown Stapler 3/8" - 1"	194	98

Above nailers come w/case, fasteners, oil & wrenches

0241/0626
0241 Brad Nailer, 0626 Stapler, case, fasteners, oil, & wrenches
Super Sale 129.95

STABILA LEVELS

25010	10" die cast Torpedo Level	43	19
24640	24" Level w/ hand holes	62.20	47
24670	48" Level w/ hand holes	79.70	59

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DEWALT TOOLS

Model	Description	List	Sale
DW309K	Recipro Saw 10 amp	318	179
DW378G	7-1/4" Framer's Saw	210	169
DW222	3/8" Drill, 0-1200 rpm	184	105
DW231	1/2" Drill, 0-850 rpm, 7.0 amp keyless chuck	240	129
DW236	1/2" Drill, 0-850 rpm, 7.8 amp with keyless chuck	264	149
DW124K	1/2" right angle Drill	590	329
DW321K	Top Handle Jigsaw Kit	300	164
DW364	7-1/4" Circ. Saw w/brake	294	162
DW610	1-1/2 HP 2 handle Router	266	149
DW411K	1/4 sheet Palm Sander w/ cse	88	58
DW682K	Biscuit Joiner with case	448	169
DW705	12" Compound Mitre Saw	734	359
DW621	2 HP Plunge Router	400	218
	DW621 comes with Free DW6956 fine height adjuster !		
DW675K	3-1/8" Planer with case	292	164
DW677K	3-1/4" Planer w/ case	268	155
DW431	3 x 21 w/spd Belt Sander	338	188
DW421	5" Palm Ran. Orb Sander	144	74
DW423	Palmgrip Random Orbit Sander - variable speed	170	94
	DW421 & DW423 come with Free DW4317 case !		
DW673K	Laminate Trimmer Kit	364	188
DW272	Drywall Gun, 0-4000, 6.3 amp	160	95
DW276	Drywall Gun, 0-2500, 6.5 amp	160	95
DW935K	14.4V 5-3/8" Trim Saw Kit	444	237

DEWALT CORDLESS DRILLS

DW972K-2	3/8"variable speed w/ two 12V XR batteries	362	184
DW991K-2	3/8"variable speed w/ two 14.4V XR batteries	415	209
DW994KQ	1/2" variable speed w/ one 14.4V XR batteries	458	239
	Above drill kits come w/ charger & steel case !		
DW991KS-2	DW991K drill, DW935 trim saw, 2 XR batteries & case	Sale	345

DEWALT 18 VOLT CORDLESS TOOLS

DW933K	NEW Jigsaw Kit	468	269
DW938K	Recipro Saw Kit	520	269
DW995K	1/2" Drill Kit w/ 1 battery	428	229
DW995K-2	1/2" Drill Kit w/ 2 batt.	Sale	259
DW997K	1/2" Drill/Hammer Drill Kit	454	249
DW936K	5-3/8" Saw Kit	458	249
DW995KS-2	DW995K Drill, DW936 Saw and case	Sale	385
DW991KC-2	DW991K 14.4V drill kit, DW937 14.4V recipro saw,& case	375	
DW995KC-2	DW995K 18V drill kit, DW938 18V recipro saw, & case	395	
DW997KC-2	DW997K 18V drill kit, DW938 18V recipro saw, & case	419	

DEWALT BENCH TOP TOOLS

DW708	12" Dual Compound Slide Mitre Saw	Sale	649
DW788	20" Scroll Saw	Sale	469
DW733	12" Planer w/ extra blades	Sale	399
DW744	10" Portable Table Saw	Sale	499
DW756	NEW 6" Bench Grinder	164	75
DW758	NEW 8" Bench Grinder	184	115

NEW DEWALT VACUUM CLEANERS

DW792	15 gallon	Sale	279
DW795	20 gallon	Sale	399

BOSCH

Model	Description	List	Sale
1587VS	Top Handle "CLIC" Jig Saw	292	139
1587AVSC	1587VS Saw Kit with case and *New* Progressor blades	Sale	149
1584VS	Barrel"CLIC"Jig Saw	288	149

Bosch Metal Case for above Jig Saws ... 24
Bosch 30 blade assortment for Jig Saws 29.99

1584VS or 1587VS
with steel case and 30 Bosch blades **Sale 175**

1295DH	5" Random Orb Palm Sndr	145	89
1274DVS	3"x21" v/spd Belt Sander	301	175
1278VSK	1-1/2"x12" Belt Sander	218	129
1275DVS	3"x24" v/s Belt Sndr	379	219
1276DVS	4"x24" v/s Belt Sndr	408	229
1194VSR	1/2" v/ spd Hammer Drill	272	155
1194VSRK	above Drill w/ case	303	169
1613EVS	2HP v/s Plunge Router	369	199
1615EVS	3 HP v/s Plunge Router	536	305
1634VSK	Recip Saw 10.5 amp	335	185
3315K	12V T-handle Drill Kit	345	159
3615K	14.4V Drill Kit	354	174
3107DVS	5" Random Orbit Sander	165	98
3107DVSK	3107DVS with case	195	115
3725DVS	5" Random Orbit Sander	256	145
3727DVS	6" Random Orbit Sander	266	149
3915	10" Slide Compound Saw	1050	499
3912	NEW 12" Cmpnd Mitre Saw	638	349
11224VSR	7/8" SDS Rotary Drill	404	229
1703AEVS	5" Grinder - 8.5 amp	245	145

The NEW Bosch Routers

1617	1-3/4 HP Router - 2 handle	Sale	169
1617EVS	2 HP Router w/ variable speed - 2 handle	Sale	189
1618	1-3/4 HP Router - "D" handle	Sale	179

JDS AIRTECH AIR CLEANERS

Model	Description	List	Sale
750	12"x24"x28" 1/4 hp 200 CFM - 750 CFM		Sale 249
8-12	20"x24"x44" 1/3 hp 800 & 1200 CFM		Sale 479

RYOBI SPECIALS

RE600	3 HP Plunge Router v/spd	500	235
BE321	3" x 21" v/spd Belt Sander	310	139
	Above sander comes with sanding frame		
WDS1600	16" x 32" Drum Sander	980	569
	Above sander comes with stand		
JM80K	Plate Jointer with case	218	99

JET TOOLS

JJ60S	6" Jointer - open stand	Sale	429
JJ6CSX	6" Jointer - closed stand	Sale	489
JJ8CS	8" Jointer - closed stand	Sale	1189
JWP124P	12" Benchtop Planer	Sale	299
JWBS14OS	14" Band Saw 3/4 HP - open stand	Sale	479
JWBS14CS	14" Band Saw 1 HP - closed stand	Sale	545
JWTS10JF	10" Contractor Table Saw with 30" Jet fence 1-1/2 HP	Sale	549
JWTS10CWPF	10" Contractor Table Saw with 30" Exacta fence 1-1/2 HP	Sale	769
JTAS10X501	10" Tilting Arbor 3 HP Table Saw with 50" Exacta fence	Sale	1399
JDP17MF	16-1/2" Drill Press 3/4 HP - 16 speed	Sale	449
DC-650	Dust Collector, 1 HP, 650 CFM	319	219
JWP-15HO	15" Planer with stand	1699	1229

PORTER CABLE

9444	Profile Sander Kit	220	99
9444VS	Var/spd Profile Sander Kit	207	119
690	1-1/2 HP Router 8 amp	278	149
6931	Plunge Router Base	139	85
693PK	690 and 6931 plus case	Sale	199
9690	690 Router with case	Sale	159
691	1-1/2 HP Router D-handle	303	168
693	1-1/2 HP Plunge Router Base	338	184
697	1-1/2 HP Router/Shaper	418	235
698	Heavy Duty Shaper Table	238	135
352VS	3x21 v/s Belt Sander w/bag	321	175
9352VS	Above sander with case	Sale	189
360	3"x24" Belt Sander w/ bag	397	214
360VS	360 Sander w/ variable speed	429	229
362	4"x24" Belt Sander w/ bag	412	225
362VS	362 Sander w/ variable speed	446	239
9125	3-1/4" Planer Kit w/ case	250	145
505	1/2 sheet Pad Sander	249	139
330	Speed Block Sander 1/4 sheet	120	68
556	Biscuit joiner w/ 5556 fence	Sale	135
557	Plate Jointer with tilt fence. Includes 2" & 4" blades for use with standard & face frame plates	400	199
5563	Face frame plates for 557		7.99
7519	3-1/4 HP Router 2 Handle	469	258
7518	3-1/4 HP 5 speed Router	534	289
7539	3-1/4 HP v/spd Plunge Router	534	295
7310	5.6 amp Laminate Trimmer	176	104
97310	Laminate Trimmer Kit comp	336	194
7335	5" Random Orbit Sander	254	139
97355	7335 w/ case & dust pick-up	274	149
7336	6" Random Orbit Sander	259	145
97366	7336 w/ case & dust pick-up	284	159
332	Palm Grip Rndm Orb Sander	133	59
333	above sander with dust bag	148	65
333VS	Random Orbit Sander - variable speed	150	85
334	333 Sander with PSA pad	148	65
335	Palmgrip Random Orbit Sander with dual flip pad	Sale	85
310	Production Lam. Trimmer	270	154
347K	7-1/4" "Framers" Circ Saw with plastic case	250	129
743K	7-1/4" "Framers" Circ Saw with case - left hand version	250	129
9737	Tiger Recipro Saw	307	159
9543VS	NEW Top Handle Jig Saw	300	169

New Porter Cable Cordless Nailers !

CDA250	Angle Finish Nailer 1-1/4" to 2-1/2"	500	279
CFN250	Finish Nailer 1" to 2-1/2"	500	279
CMS200	Medium Crown Stapler 1" to 2"	500	279

Porter Cable Pneumatic Nailers

BN125	Brad Nailer -18 ga. 5/8"- 1-1/4"	144	89
BN200	Brad Nailer -18 ga. 3/4"-2"	238	128
FN250A	Finish Nailer -16 ga. 1"-2-1/2"	362	185
DA250A	Nailer -15 ga. 1-1/4"-1-1/2"	412	215
FC350	Framing Nailer - clipped head	558	289
FR350	Framing Nailer - round head	558	289
RN175	Roofing Coil Nailer	504	289

CFBN125 BN125 nailer, CF1400 compressor and 25' air hose
Sale 259.00

Porter Cable Compressors

CF1400	1 HP, 4 gal. Pancake	Sale	195
CF1540	1-1/2 HP, 4 gallon Side Stack	Sale	305
CF2400	2 HP, 4 gal. Side Stack	Sale	325
CF2020	2 HP, 20 gallon wheeled	Sale	425

Porter Cable Cordless Drills

9862	12V Drill Kit w/ 2 batteries	382	149
9862F	9862 Drill Kit with flashlight	Sale	159
9872	14.4V Drill Kit w/ 2 batteries	424	185

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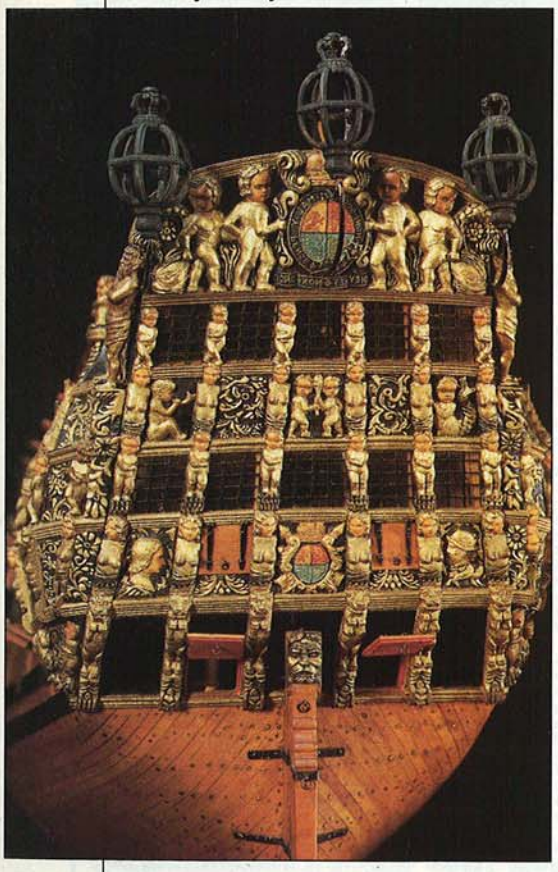
The royal cost of carving

Among the many exquisite ship models in the August F. Crabtree Collection of the Mariners' Museum in Newport News, Virginia, is a strikingly detailed English man-of-war. As shown in the photo *below*, the ¼" to 1' scale fighting ship displays the elaborate carving popular on ships of the Royal Navy during the 1600s. According to the Mariners' Museum, the cost to the English admiralty for such carving represented fully one-quarter the total price of a ship!

At the time, shipbuilders commissioned by the Royal Navy would make detailed scale models (like the one in the photograph *below*) of the ship they were entrusted with constructing. The magnificent models were submitted to, then scrutinized by, the top brass for building approval, alteration, or rejection.

This stern view of a model 1687 English warship reflects the extensive carving the Royal Navy demanded.



Buy boards, plant a tree

Milwaukee, Wisconsin, based Timber Holdings Limited (THL) encourages users of its imported Iron Woods to participate in replanting forests in Africa, Australia, and New Zealand where the trees originated. They even make it easy.

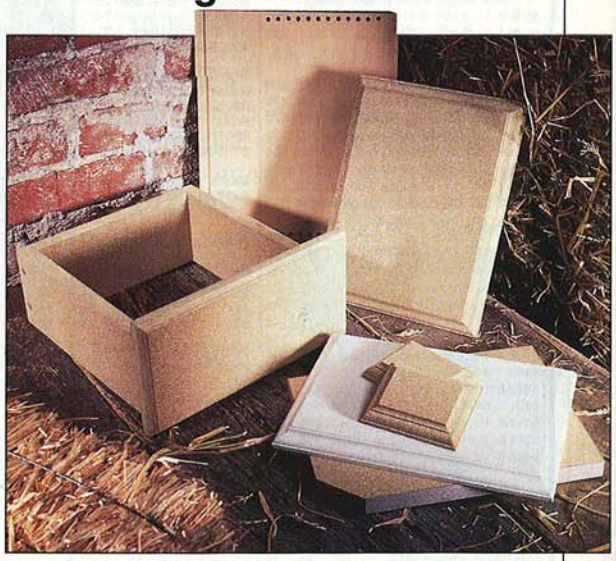
In their Field to Forest program, architects, manufacturers, and builders who buy or specify THL's outdoor construction woods simply calculate how many trees it took to provide the wood for their projects (based on 500 board feet per tree). Then, they fill out an order for that many trees or more and send it—along with a check—to Field to Forest, which supervises the planting. According to THL executive Brian Lotz, the trees are planted in forests environmentally certified as well-managed by the Rain Forest Alliance. Those who participate in Field to Forest receive a certificate documenting their contribution. (For more informatrion, call 414/445-8989.)

Timber Holdings Limited's Iron Woods prove virtually indestructible, and even carry a fire rating equal to steel and concrete. Australian jarrah, one of the Iron Woods, was used in the boardwalk at Atlantic City, New Jersey, above.

Fiber for your woodworking diet

Health experts recommend that you eat more foods with fiber as you get older. Now, there's a company that hopes to put more fiber in your woodworking, too.

Harvest Board International, Inc. (816/531-8858), a Kansas City, Missouri, corporation, is building a Kansas plant to manufacture a particleboard made from straw. Called Harvestboard, the agrifiber material comes from waste straw remaining after wheat has been harvested. Obtained from local wheat producers, the straw is processed into fine fibers, then pressed with non-toxic, formaldhyde-free resin into composite sheets. The company says that Harvestboard proves to be 20 percent lighter than comparable wood-based products, with better water resistance and greater strength. It also should be competitively priced because it's made from wheat waste. However, Harvestboard initially will be sold only to end-product manufacturers of ready-to-assemble furniture, cabinetry, mobile homes, and store fixtures. A limited amount is scheduled to reach retail outlets, such as home centers.

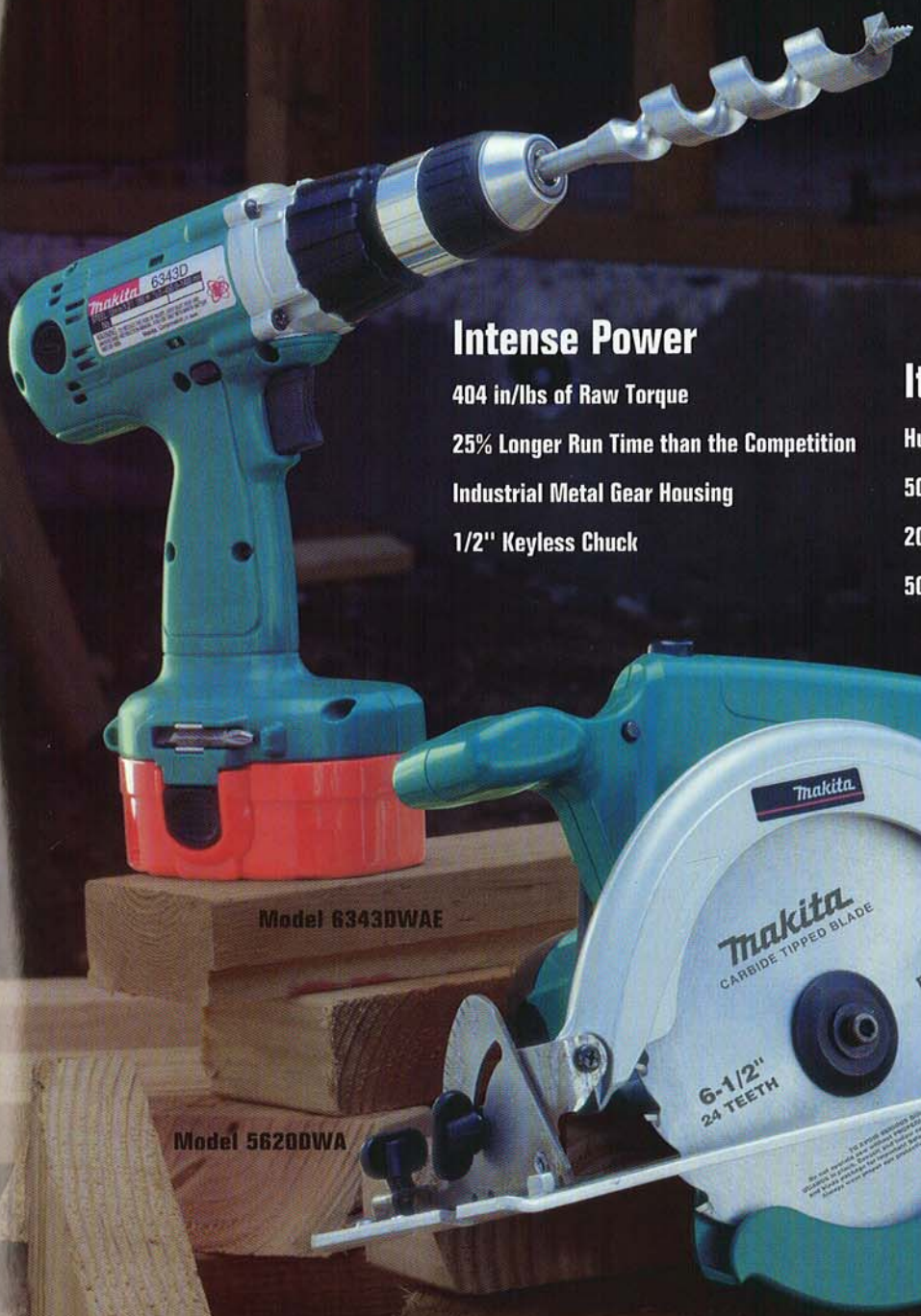


Harvestboard, a new sheet product made from wheat straw, can be worked like traditional wood-based particleboard.

Photographs: Ship, courtesy of The Mariners' Museum, Newport News, Virginia; Timber Holdings Ltd.; Harvest Board International, Inc.

makita ULTIMATE CORDLESS

ULTIMATE CORDLESS 18V



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